United States Department of the Interior

NATIONAL PARK SERVICE
Big Thicket National Preserve
3785 Milam
Beaumont, Texas 77701

(409) 839-2689
FAX 839-2599

IN REPLY REFER TO:
L3025 (BITH-RM)

September 29, 2004

Dear Reader:

Enclosed for your review and comment is an Environmental Assessment covering Comstock Oil and Gas, Inc.'s proposal to directionally drill and produce the Black Stone B1 and D1 wells from surface locations on the east and west sides of the Big Sandy Creek Unit (Unit) of Big Thicket National Preserve to bottomhole targets beneath the Unit, Polk County, Texas. The surface location of the wellhead for the Black Stone B1 well (eastside) would be sited 300 feet from the Unit boundary, and the well/production pad would be within 100 feet of the Unit boundary. The surface location of the wellhead for the Black Stone D1 well (westside) would be sited 715 feet from the Unit boundary, and the well/production pad would be within 515 feet of the Unit boundary.

The National Park Service is asking for your comments on this proposal. Please send written comments to the address below:

Superintendent
Big Thicket National Preserve
3785 Milam Street
Beaumont, TX 77701

Comments must be received by October 28, 2004 to be accepted. If we can be of further assistance, please contact Curtis Hoagland, Chief, Resources Management Division, at 409-839-2690, extension 224.

Sincerely,

Art Hutchinson
Superintendent

vice
U.S. Department of the Interior

Environmental Assessment

Comstock Oil and Gas, Inc.
Proposal to Directionally Drill and Produce
the Comstock Black Stone Mineral Company L.P.
Unit B1 and D1 Wells
from Surface Locations outside the Big Sandy Creek Unit,
Big Thicket National Preserve,
Polk County, Texas

September 2004

In 1916, Congress created the National Park Service in the Department of the Interior to:

…promote and regulate the use of the Federal areas know as national parks, monuments, and reservations…by such means and measures as to conform to the fundamental purpose of said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. (NPS Organic Act, 16 U.S.C. § 1)

Prepared by
United States Department of the Interior • National Park Service

Environmental Assessment

Proposal by Comstock Oil and Gas, Inc. to Directionally Drill and Produce the Black Stone B1 and D1 Wells from Surface Locations outside the Big Sandy Creek Unit to Bottomhole Locations inside the Unit Big Thicket National Preserve, Polk County, Texas

Summary: In accordance with National Park Service (NPS) regulations for nonfederal oil and gas rights, Comstock Oil and Gas, Inc., (Comstock) submitted an application to the NPS to directionally drill and produce the Black Stone B1 and D1 wells from surface locations outside the Big Sandy Creek Unit (Unit) of Big Thicket National Preserve (Preserve), to bottomhole targets beneath the Unit. The proposed Black Stone B1 wellhead would be sited 300 feet east of the Unit boundary; and the production pad would be placed within 100 feet of the Unit's boundary. The proposed Black Stone D1 wellhead would be sited 715 feet west of the Unit boundary; and the wellpad would be placed within 515 feet of the Unit boundary. The wells and appurtenant access and production facilities would be located on lands owned and managed by Dennis Prejean and Molpus Timberlands Management. The wells would be drilled and completed, or plugged and abandoned if dry, during the Fall/Winter of 2004.

This Environmental Assessment evaluates two alternatives. Alternative A, No Action, evaluates baseline conditions in which the wells would not be drilled; therefore, there would be no new impacts on the environment. Alternative B, Proposed Action, evaluates Comstock's proposal to directionally drill and produce the Black Stone B1 and D1 wells. Due to directionally drilling from outside the Unit, and the application of other mitigation measures, most impacts on Unit resources and values would be substantially reduced. Potential impacts on Unit resources and values, as summarized in Section 1, are expected to be of low intensity (no effect, or negligible to minor). Therefore, many topics have been dismissed from further analysis in this EA. Impact topics carried through for further analysis in the EA include natural soundscape in the Unit, and adjacent landowners, resources, and uses. Increased noise levels during drilling and subsequent production activities would result in short- to long-term, negligible to moderate, adverse impacts on the natural soundscape within the Unit. There would be no potential for impairment to Unit resources and values from the proposed action. The topic, Adjacent Landowners, Resources and Uses was qualitatively analyzed. The proposed action would convert up to 6.74 acres of prime farmland soils to oil and gas use, and result in localized, short- to long-term, adverse impacts on air quality, natural soundscape, geology and soils, and vegetation; but no adverse effects on cultural resources or Federally-listed threatened and endangered species.

Public Comment: If you wish to comment on this EA, please mail your comments to the address below for receipt by October 28, 2004. Please note that names and addresses of people who comment become part of the public record. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment letter. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Superintendent
Big Thicket National Preserve
3785 Milam
Beaumont, Texas 77701

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1.0 PURPOSE OF AND NEED FOR ACTION

This document has been prepared to comply with the National Environmental Policy Act and will be used as a framework for agency decision-making. This Environmental Assessment (EA) evaluates the environmental impacts of the No Action alternative and Comstock's proposal to directionally drill and produce the Black Stone B1 and D1 wells from surface locations outside the Big Sandy Creek Unit to bottomhole targets beneath the Unit.

One of the purposes of this analysis is to determine whether Comstock's directional wells would qualify for an exemption from the NPS's nonfederal oil and gas rights regulations found at 36 CFR 9B. Specifically, Section 9.32(e) governs operators that propose to develop nonfederal oil and gas rights in any unit of the National Park System by directionally drilling a well from a surface location outside unit boundaries to a location under federally owned or controlled lands within park boundaries. Per § 9.32(e), an operator may obtain an exemption from the 9B regulations if the Regional Director is able to determine from available data that a proposed drilling operation under the park poses *"no significant threat of damage to park resources, both surface and subsurface, resulting from surface subsidence, fracture of geological formations with resultant fresh water acquifer [sic] contamination or natural gas escape or the like."* This EA also serves the purpose of disclosing to the public the potential impacts on the human environment, both inside and outside the Unit. The impact analyses will take a "general look" at the impacts that could occur on adjacent lands.

When Congress authorized the establishment of Big Thicket National Preserve on October 11, 1974, the U.S. Government acquired surface ownership of the area. Private entities retained the subsurface mineral interests on most of these lands, while the State of Texas retained the subsurface mineral interests underlying the Neches River and navigable reaches of Pine Island Bayou. Thus, the federal government does not own any of the subsurface oil and gas rights in the Preserve, yet the NPS is required by its laws, policies and regulations to protect the Preserve from any actions, including oil and gas operations, that may adversely impact or impair Preserve resources and values. Figure 1 is a project location map depicting the 12 units of the Preserve, and the proposed project location.

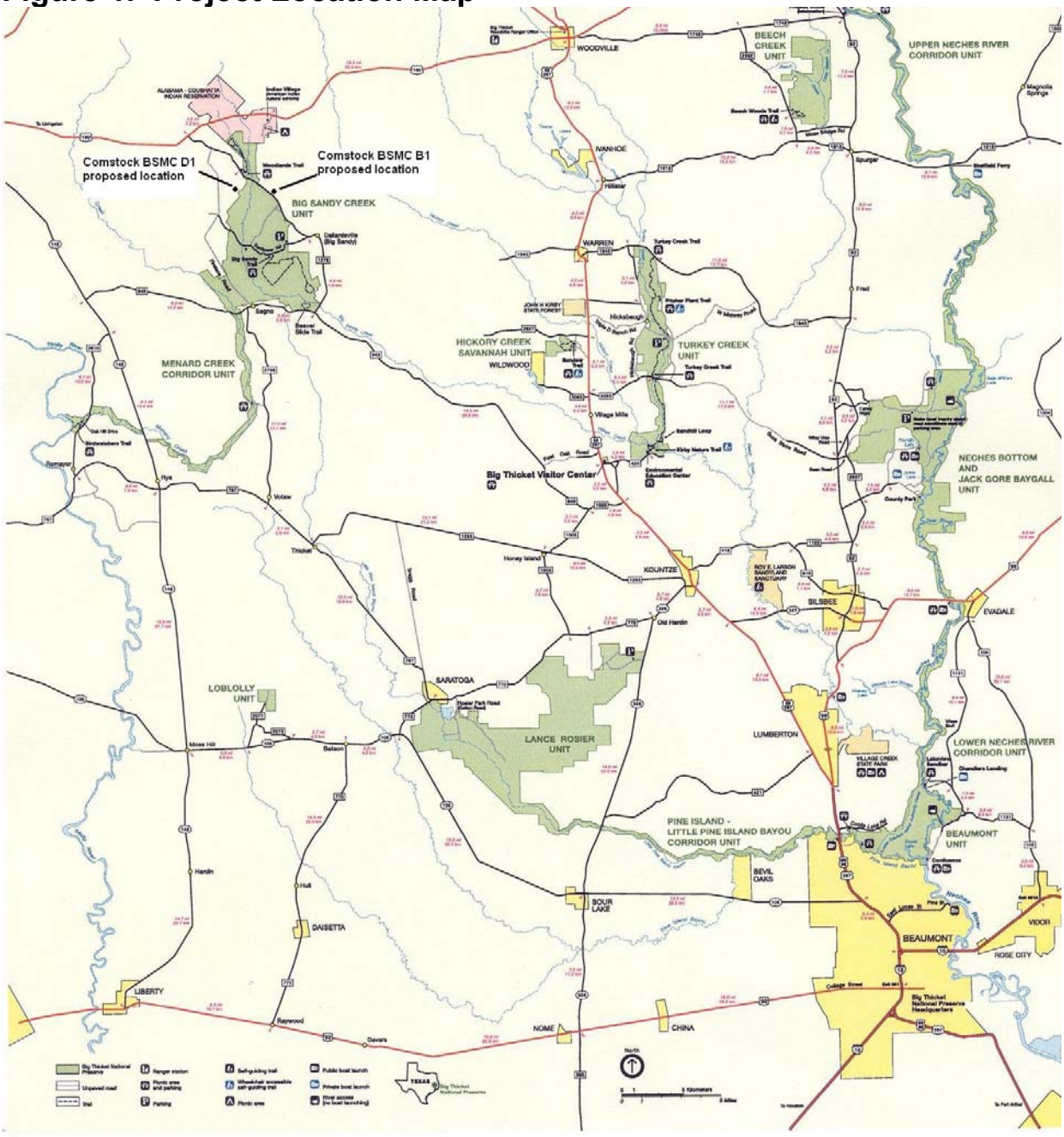
Comstock submitted two applications to the NPS describing how it proposes to directionally drill and produce the Black Stone B1 and D1 wells from surface locations outside the Unit to reach bottomhole targets beneath the Unit. The NPS determined the applications to be substantially complete on August 26, 2004.

The analysis area for evaluating impacts in this EA includes:

- The direct area of impact for the Black Stone B1 well includes a 3.67-acre surface location for the well. An area logging road would provide access to the well location that extends approximately 100 feet from FM 1276 and passes along the southeastern edge of the proposed well/production pad. A 4-6 inch diameter gathering line would extend approximately 800 feet north of the well and connect with an existing pipeline.
- The direct area of impact for the Black Stone D1 well includes a 3.47-acre surface location for the well. An area logging road would provide access to the well location that extends from FM 1276 for a distance of approximately .8 miles to the well site. A 4-6 inch diameter gathering line would extend approximately 8,200 feet north of the well and connect with an existing pipeline.

- The indirect area of impact extends 1,500 feet beyond each of the well sites, their associated access roads, and gathering lines. NPS selected the 1500-foot offset because noise generated during drilling and construction activities may require up to 1,500 feet to attenuate to background levels.
- The analysis area of cumulative impacts includes the entire Big Sandy Creek Unit and areas contiguous to the Unit.

Figure 1. Project Location Map



1.1 Objectives of Taking Action

The objectives of taking action are to:

- Provide Comstock, as the lessee of nonfederal oil and gas mineral interests, access to explore for and develop oil and gas resources in a manner that will assure the natural and ecological integrity of the Preserve.
- Avoid or minimize impacts on Unit resources and values, visitor use and experience, and human health and safety.
- Prevent impairment of Unit resources and values.

1.2 Special Mandates and Direction

The NPS evaluates project-specific proposals for oil and gas production and transportation on a case-by-case basis by applying a variety of Current Legal and Policy Requirements prior to issuing a permit under the general regulatory framework of the NPS Nonfederal Oil and Gas Rights Regulations (36 CFR 9B). The following discussion is a summary of the basic management direction the NPS follows for permitting nonfederal oil and gas operations in units of the National Park System.

1.2.1 NPS Organic Act and General Authorities Act – Prevention of Impairment

The NPS Organic Act of 1916 (16 U.S.C. § 1, *et seq.*) provides the fundamental management direction for all units of the National Park System. Section 1 of the Organic Act states, in part, that the NPS shall:

> "…promote and regulate the use of the Federal areas known as national parks, monuments, and reservations…by such means and measure as conform to the fundamental purpose of said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." 16 U.S.C. §1.

The National Park System General Authorities Act of 1970 (16 U.S.C. § 1a-1 *et seq*.) affirms that while all national park system units remain "distinct in character," they are "united through their interrelated purposes and resources into one national park system as cumulative expressions of a single national heritage." The Act makes it clear that the NPS Organic Act and other protective mandates apply equally to all units of the system. Subsequently, the 1978 Redwood Act Amendments to the General Authorities Act further clarified Congress' mandate to the NPS to protect park resources and values. The Amendments state, in part: "[t]he authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress." 16 U.S.C. § 1a-1.

Current laws and policies require the analysis of potential effects to determine whether actions would impair park resources. While Congress has given the NPS the managerial discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement

(enforceable by the federal courts) that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise (2001 Management Policies, §1.4).

These authorities all prohibit an impairment of park resources and values. Not all impacts are impairments. An **impairment** is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. The NPS Management Policies explain that an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

1) necessary to fulfill a specific purpose identified in the establishing legislation or proclamation of the park,
2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
3) Identify as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute impairment to the extent that it is an unavoidable result, which cannot be reasonably further mitigated, of an action necessary to preserve or restore of park resources or values.

NPS Management Policies explain that "resources and values" mean the full spectrum of tangible and intangible attributes for which the parks are established and are being managed, including the Organic Act's fundamental purposes (as supplemented), and any additional purposes as stated in a park's establishing legislation. Park resources and values that are subject to the no impairment standard include: the biological and physical processes which created the park and that continue to act upon it, scenic features, natural visibility, natural soundscapes and smells, water and air resources, soils, geological resources, paleontological resources, archeological resources, cultural landscapes, ethnographic resources, historic and prehistoric sites, structures and objects, museum collections, and native plants and animals. Additional resources and values that are subject to the non-impairment standard include the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environment quality of the nation park system.

Section 3 provides an analysis of the potential for impairment for each park resource or value carried forward for further evaluation.

1.2.2 Big Thicket National Preserve Enabling Act

The Preserve was established by the Act of October 11, 1974, Pub. L. No. 93-439, 88 Stat. 1254, codified as amended at 16 U.S.C. §§ 698-698e (2000), as the nation's first Preserve "to assure the preservation, conservation, and protection of the natural, scenic, and recreational values of a significant portion of the Big Thicket area in the State of Texas and to provide for the enhancement and public enjoyment thereof." The Preserve includes 12 units located in Jefferson, Hardin, Liberty, Polk, Tyler, Jasper, and Orange Counties, Texas. Within the Preserve, the United States currently owns fee simple title to the surface estate of approximately 88,132 acres of land.

The Preserve's authorizing legislation provides that the United States shall not acquire the mineral estate within the Preserve unless the Secretary of the Interior "first determines that such property or estate is subject to, or threatened with, uses which are, or would be, detrimental to the purposes and objectives of sections 698 to 698e of this title." 16 U.S.C. §§ 698a(a). However, it also directs the Secretary "to promulgate and publish such rules and regulations in the Federal Register as he deems necessary and appropriate to limit and control the use of, and activities on, Federal lands and waters with respect to: ...(2) exploration for, and extraction of, oil, gas, and other minerals." Id at subsection 698c(b).

One of the primary rights associated with the mineral interest is the right of reasonable access to explore for and develop the mineral interest. If the mineral interest holder chooses to exercise its right to explore for or develop its mineral interest, the NPS must consider granting some form of access in the Preserve. However, access to nonfederal oil and gas which requires access on, across, or through federally owned or controlled lands or waters within the Preserve is subject to the NPS's Nonfederal Oil and Gas Rights Regulations.

1.2.3 NPS Nonfederal Oil and Gas Regulations, 36 CFR 9B

The authority to manage and protect federal property arises from the Property Clause of the United States Constitution. The Property Clause provides that "Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States . . ." U.S. Const. Art. IV, § 3, cl. 2.

In 1916, Congress exercised its power under the Property Clause and passed the NPS Organic Act, 16 U.S.C. § 1 *et seq*. Section 3 of the Organic Act authorizes the Secretary of the Interior to "make and publish such rules and regulations as he may deem necessary or proper for the use of the parks…" 16 U.S.C. § 3.

Pursuant to section 3 of the NPS Organic Act and individual park statutes, the Secretary of the Interior promulgated regulations at 36 CFR Part 9, Subpart B ("9B regulations") in 1979. The 9B regulations apply to operations that require access on or through federally owned or controlled lands or waters in connection with non-federally owned oil and gas in all National Park System units (36 CFR § 9.30(a)). The Service's jurisdiction under these regulations does not extend to any activities occurring outside park boundaries, even if such activities are associated with a nonfederal oil and gas operation occurring inside a park.

The NPS Nonfederal Oil and Gas Rights Regulations (36 CFR 9B) and other regulatory requirements assist park managers in managing oil and gas activities so they may be conducted in a manner consistent with the NPS mandate to protect park resources and values. The application and implementation of these regulations on the ground must be assessed parkwide for each site-specific oil and gas activity to determine if these activities have the potential to impair park resources and values.

Section 9.32(e) of the regulations governs operators that propose to develop their nonfederal oil and gas rights in a park by directionally drilling a well from a surface location outside unit boundaries to a location under federally owned or controlled lands or waters within park boundaries. It is limited in scope to those aspects of the directional drilling operation occurring within park boundaries.

Per § 9.32(e), an operator may obtain an exemption from the 9B regulations if a Regional Director is able to determine from available data that a proposed drilling operation under the

park poses *"no significant threat of damage to park resources, both surface and subsurface, resulting from surface subsidence, fracture of geological formations with resultant fresh water acquifer [sic] contamination or natural gas escape or the like."* The regulations define operations as *"all functions, work and activities within a unit in connection with exploration for and development of oil and gas resources, the right to which is not owned by the United States..."*(36 CFR § 9.31(c), underlining added). The potential impacts considered in the §9.32(e) exemption process relate only to effects on park resources from downhole activities occurring within the boundary of the park, not threats to park resources associated with the operation outside park boundaries.

Under the regulations, the NPS may determine that 1) an operator qualifies for an exemption from the regulations with no needed mitigation to protect park resources from activities occurring within park boundaries, 2) an operator qualifies for an exemption from the regulations with needed mitigation to protect subsurface park resources from activities occurring within park boundaries, or 3) an operator must submit a proposed plan of operations and a bond to the NPS for approval. Each one of these legally permissible options is briefly described below.

1) **Exemption with No Mitigation** (*no approval or permit issued)***:** The NPS determines that the proposed operation inside the park qualifies for an exemption under § 9.32(e) without any mitigation or conditions required by the NPS on the downhole activities. This option will arise when there is no potential for surface or subsurface impacts in the park from the downhole activities (e.g., the wellbore does not intercept an aquifer within the park). Under this option, the NPS is not granting an approval or issuing a permit.

   The Black Stone B1 and D1 directional wells qualify for an Exemption with No Mitigation because the wellbores would be drilled to cross into the Unit at a substantial depth so as to not cross usable quality ground water. The Black Stone B1 wellbore would cross into the Unit at a depth below 4,825 feet and the Black Stone D1wellbore would cross into the Unit at a depth below 5,675 feet. Usable quality ground water occurs from the surface to 1,850 feet in the area of the Black Stone B1 well; and to 1,750 feet in the area of the Black Stone D1 well.

2) **Exemption with Mitigation** *(no approval or permit issued)***:** The NPS determines that the proposed operation inside the park qualifies for an exemption under § 9.32(e) if there is no potential for surface impacts to park resources from downhole operations in the park and the operator adopts mitigation measures or conditions that reduce potential impacts on subsurface resources (e.g., an aquifer) to "no measurable effect." As in option #1 above, the NPS is not granting an approval or issuing a permit.

3) **Plan of Operations** *(approval and "permit" issued)***:** This regulatory option would apply if NPS determines that it cannot make the requisite finding for a § 9.32(e) exemption because (1) impacts to surface resources are involved, or (2) impacts to subsurface resources cannot be adequately mitigated to yield "no measurable effect." This option would also apply if an operator does not apply for an exemption and the NPS does not consider granting an exemption on its own initiative. In these cases a prospective operator must submit and obtain NPS approval of a proposed plan of operations and file a bond before commencing directional drilling activities inside a park. The required plan and bond will be limited in scope to those aspects of

the directional drilling operation that occur within park boundaries. As a result, many of the general plan information requirements set forth under § 9.36 will not apply. Mitigation measures and/or conditions of approval would be integral to this option. Such mitigation could encompass the protection of cultural resources, cave/karst resources, aquifers, floodplains, wetlands and other surface resources from operations occurring inside the park. Under this option, an operator must have the NPS's approval of a proposed plan before commencing any activity in the boundaries of the park. The approved plan constitutes the operator's "permit."

1.2.4 Protecting Park Resources from External Activities

The NPS may seek compensation under 16 U.S.C. § 19jj and other appropriate statutes, if any activities outside park boundaries, including oil and gas operations damage park resources.

1.2.5 NPS Monitoring of Nonfederal Oil and Gas Operations

The NPS ability to monitor and inspect directional drilling operations is limited to downhole operations within the park (e.g., setting and cementing surface casing and plugging operations, etc.). As a practical matter, monitoring of downhole activities inside the park can only be accomplished from the surface location outside the park. As a result, the NPS may need to access the surface location and should make such access a condition of an exemption under option 2 or a condition of approval under option 3. The NPS must coordinate the timing of such access with the operator. For directional drilling operations sited outside a park, the 9B regulations provide no authority to require an operator to grant the NPS access for the purpose of observing compliance with terms unrelated to the downhole activities inside the park. When the NPS has made an upfront determination that a directional drilling operation is exempt without conditions from the regulations because of the lack of impacts, there is no 9B regulatory reason to access the surface location outside the park (option 1).

Where a state or federal agency, other than the NPS, has applied mitigation measures via their respective environmental compliance or permitting processes, that agency, not the NPS, has sole responsibility for monitoring and enforcing its mitigation measures. However, in the event the NPS becomes aware of a compliance concern related to another agency's jurisdiction, the NPS should alert that agency in a constructive manner.

1.2.6 National Environmental Policy Act of 1969 (NEPA)

The National Environmental Policy Act (NEPA) applies to major federal actions. NEPA requires agencies to take a "hard look" at the environmental consequences of their proposed actions. (Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989)). A legally adequate NEPA document (EA or EIS) must consider the direct, indirect and cumulative impacts (effects) of the proposed action on the environment, along with connected, cumulative and similar actions. (40 C.F.R. § 1508.25; DO-12 Handbook, Chapter 2, § 2.4)

The requirements of NEPA are triggered by ***federal*** actions (*projects, activities, or programs funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency*). The NEPA process must be completed before a decision can be made to proceed with the proposal.

While it can be argued that NEPA is not triggered under options #1 and #2 described above because the NPS does not grant an approval or issue a permit under these options, the prudent course of action the NPS has selected is to comply with this statute in making § 9.32(e) determinations. In addition, the NEPA document will contain the analysis and documentation required under § 9.32(e) and will disclose to the public the potential impacts that could occur both inside and outside of the park.

The types of impacts considered are direct, indirect, and cumulative. Actions may be connected, cumulative, and similar.

1) **Connected actions** are closely related and therefore should be discussed in the EA. Actions are connected if they:
   (i) automatically trigger other actions, which may require environmental analysis under NEPA.
   (ii) cannot or will not proceed unless other actions are taken previously or simultaneously.
   (iii) are interdependent parts of a larger action and depend on the larger action for their justification.

   Connected actions occurring outside of the park related to the directional drilling operation inside the park include the construction of the well/production pad(s), gas sales/transportation line, and access road; drilling and completion; hydrocarbon production and transportation; and well plugging and surface reclamation. The impacts of these connected actions will be described in a general sense in this EA both inside and outside of the unit.

2) **Cumulative actions** when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same environmental document.

   Cumulative actions that should be analyzed in the NEPA document include surface drilling and production operations outside of the park as well as any other activities that may have additive impacts to resources (e.g., logging, road building, construction projects, prescribed burns, etc.).

3) **Similar actions** when viewed with other reasonably foreseeable or proposed agency actions have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same NEPA document. The agency should do so when the best way to assess the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

   Similar actions could include activities such as the construction of private and public roads, drilling of water wells, and other types of construction activities.

1.2.7 Approved Park Planning Documents

Approved park planning documents also provide a framework for determining how nonfederal oil and gas operations are conducted within Big Thicket National Preserve.

The General Management Plan (GMP) is the major planning document for all National Park System units. The GMP sets forth the basic philosophy of the unit, and provides strategies for resolving issues and achieving identified management objectives required for resource management and visitor use. The GMP includes environmental analysis and other required compliance documentation. A GMP was completed for Big Thicket National Preserve in 1980. The park is currently preparing a new GMP and anticipates its completion in 2006.

The Preserve is developing a Programmatic Oil and Gas Management Plan/EIS: The Draft Plan/EIS is scheduled to be released for public review and comment this Fall/Winter.

Comstock's proposals to directionally drill the Black Stone B1 and D1 wells are in accordance with the goals and objectives articulated in the above mentioned planning documents.

1.3 Issues and Impact Topics Evaluated

Early in the planning and development of the directional drilling application by Comstock, the NPS scoped with Comstock and its consultant, Blanton and Associates, and others, including the Alabama-Coushatta Tribe of Texas, State Historic Preservation Office, Natural Resource Conservation Service, and U.S. Fish and Wildlife Service, to identify the resources, values, and other concerns that could be potentially impacted by drilling and producing the Black Stone B1and D1 wells, to define major issues, alternatives, potential impacts, and mitigation measures. The scoping process has been conducted through meetings, telephone conversations, written comments, and on-site observations and assessments.

As per Director's Order 12, scoping, or requesting early input before the analysis formally begins, is required on all EAs prepared by NPS. Although public scoping is encouraged where an interested or affected public exists, issuing offices are only required to involve appropriate federal, state, and local agencies and any affected Indian tribe. The issuing office decides the method of scoping. For Comstock's directional drilling application, the Preserve prepared a public scoping brochure to announce a 2-week public scoping period. On August 5, 2004, the Preserve mailed the scoping brochure to affected state, federal and local agencies, and also to Comstock, Houston Sierra Club, and other interested persons and organizations. The Preserve also posted the public scoping brochure on the park's website. One scoping comment letter was received from the Houston Sierra Club.

Public scoping was conducted to seek the input of the interested public to identify if there were any additional resources and concerns that were not already listed in the brochure; and to seek input on additional reasonable alternatives in addition to the four preliminary alternatives listed in the brochure. The Sierra Club's public scoping comment letter identifies no additional resources and concerns, or alternatives not already being considered.

Based on scoping, the NPS identified the following impact topics for evaluation in this EA:

- Natural Soundscape in the Unit;
- Adjacent Landowners, Resources, and Uses, focusing on an analysis of the following resources and values:

- Air Quality
- Natural Soundscape
- Geology and Soils
- Vegetation
- Federally-Listed Threatened and Endangered Species
- Cultural Resources

Based on the above list of impact topics, issue statements were developed to define problems or benefits pertaining to the proposal to drill and produce the directional wells (see Table 1). The issue statements describe a cause and effect relationship between an activity and the impact topic.

Table 1. Issue Statements

Impact Topic	t
Natural Soundscape in the Unit	• Vehicles and equipment used for maintenance of the access roads, well/production pads, and gathering lines; and for drilling, production and reclamation activities, could result in increased noise, adversely affecting wildlife and visitor uses and experience.
Adjacent Landowners, Resources, and Uses	• Impacts on adjacent landowners from the development of nonfederal oil and gas could be beneficial (e.g., roads could be constructed or maintained) and/or adverse (e.g., operations could pose a threat to human health and safety and property). • Siting the proposed Black Stone B1 and D1 wells, production facilities, gathering lines, and access roads could result in adverse impacts on air quality, natural soundscapes, geology and soils, vegetation, and water resources. • **Air Quality.** Maintenance of the access roads, well/production pads, and gathering lines; and exhaust from combustion of gasoline and diesel-powered vehicles and equipment used for drilling and production operations would increase emissions of particulate matter which could affect air quality, including visibility in the general vicinity of the operations. • Combustion of gasoline and diesel-powered vehicles and equipment would emit pollutants, including nitrogen oxides, volatile organic compounds, carbon monoxide, sulfur dioxide, particulate matter, and objectionable odors. These emissions could degrade air quality within the vicinity and contribute toward regional air quality degradation. Nitrogen oxides and volatile organic compounds are primary precursors to ozone formation, which, depending on ambient concentrations, can have damaging effects on some vegetation and on the health of humans and wildlife. • **Natural Soundscape.** Vehicles and equipment used for construction and maintenance of the oil and gas access roads, wellpads, production facilities, and flowlines could result in increased noise, adversely affecting wildlife and visitor uses and experience. • **Geology and Soils.** Grading and leveling for the access roads well/production pads, and gathering line corridors would result in

Impact Topic	Issue Statement
	soil compaction and loss of productivity of up to 16.3 acres, including up to an estimated 6.74 acres of prime farmland soils for the duration of the oil and gas activities. • The release of hydrocarbons or other contaminating and hazardous substances from vehicles, equipment, and gathering lines during exploration and production operations, could alter the chemical and physical properties of the soil in the vicinity of the oil and gas activities. Changes in soil properties could result directly from contact with contaminants on-site, or indirectly, via runoff from contaminated areas. • **Vegetation.** Vegetation would be totally removed on up to 16.3 acres. Vegetation removal could change the structure and composition of vegetative communities in the project area; alter wildlife habitat and species composition; increase storm runoff; and increase soil erosion. • The release of hydrocarbons and contaminating or hazardous substances could damage or kill vegetation directly, via contact with contaminants on-site, or indirectly, via pathways from contaminated areas. • Disturbances/removal of native vegetation could lead to the unintentional spread and establishment of non-native plant species transported in or on drilling and maintenance equipment. • Reclamation of the oil and gas site could re-establish native vegetative communities and surface and subsurface drainage patterns necessary to support vegetative growth. • **Federally-Listed Threatened and Endangered Species.** Vehicle use off established roads, loss or modification of habitat due to construction and maintenance activities, introduction of artificial lighting, increased noise from earthmoving and drilling/production activities, and release of hydrocarbons and contaminating or hazardous substances could harm or kill wildlife, and interfere with natural processes. • **Cultural Resources.** Vehicle use off established roads, and other ground-disturbing activities in areas where National Register of Historic Places-eligible archeological resources are located would result in the loss of the archeological resources if not mitigated.

1.4 Issues and Impact Topics Eliminated from Further Analysis

Impact topics are dismissed from further evaluation in this EA if:

- they do not exist in the analysis area,
- they would not be affected by the proposal, or
- through the application of mitigation measures, there would be minor or less effects from the proposal, and there is little controversy on the subject or reasons to otherwise include the topic. Minor impacts are generally those that would result in a change to the resource or value, but the change would be small and of little consequence and would

be expected to be short-term and localized. Mitigation measures, if needed to offset adverse effects, would be simple and successful.

The following topics have been eliminated from further analysis for the reasons described.

- Socioeconomics in and outside of the Unit
- Environmental Justice
- Prime and Unique Farmlands in the Unit
- Air Quality in the Unit
- Lightscape Management in and outside of the Unit
- Geology and Soils in the Unit
- Water Resources, Floodplains, and Wetlands in and outside of the Unit
- Vegetation in the Unit
- Fish and Wildlife in and outside of the Unit
- Threatened and Endangered Species, and Other Species of Management Concern in the Unit
- Cultural Resources in the Unit
- Visitor Use and Experience in the Unit

For Unit resources and values being dismissed because, due to the application of mitigation measures, the impacts would be minor or less effects, a limited analysis is provided under two headings: impacts from in-park operations, and impacts from connected actions. The analysis of impacts from in-park operations contains the analysis and documentation required under § 9.32(e). The analysis of impacts from connected actions satisfies a broader NEPA requirement to assess impacts on the human environment. In instances where the resource or value outside the Unit is being dismissed, a qualitative analysis is provided in the summary paragraph following the above two headings.

Socioeconomics in and outside of the Unit

Socioeconomic issues include the effect of drilling the Black Stone B1 and D1 wells on the local and regional economies. The following description also provides supporting data for cumulative impact analysis on topics carried forward for further evaluation in Section 3.

Big Thicket National Preserve lies within the Railroad Commission of Texas' (RRC) District 3. During 2003, 1358 drilling permits were issued by the RRC in the 29 counties comprising District 3. For the 7-county area encompassing the Preserve, 260 drilling permits were issued, comprising 19 percent of the District-wide total. Production in 2002 for District 3 totaled 25.7 million barrels of oil, and 55.7 million cubic feet of gas. In the 7-county area encompassing the Preserve, production of oil totaled 4.6 million barrels (18 percent of the District total), and 13.3 million cubic feet of gas (24 percent of the District total) (RRC 2004).

The NPS has prepared a reasonably foreseeable development (RFD) scenario to project future oil and gas development, based on an assessment by the U.S. Geological Survey of remaining hydrocarbons beneath Big Thicket National Preserve (DOI 2000). The RFD provides a reasonable assumption of future development of nonfederal oil and gas for park planning purposes and to provide a basis to measure potential environmental impacts. The RFD projects that initially 3-D seismic surveys would be conducted throughout the entire Preserve and would be used to delineate oil and gas drilling prospects. It was assumed that approximately 29 additional wells would be drilled over the next 15-20 years to produce the estimated 1.21 million barrels of oil, 70.11 billion cubic feet natural gas, and 1.02 million barrels natural gas liquids

from Tertiary and Upper Cretaceous-age reservoirs underlying the Preserve. Of the 29 wells reasonably anticipated to be drilled, 19 are hypothetically projected to be commercially successful. Under this RFD scenario, it would reasonably be anticipated that Preserve-wide, up to 267 acres could be disturbed for geophysical exploration operations; and up to 153 acres could be developed for drilling, production, and transportation operations for a total future development of 420 acres. Due to the narrow, linear nature of many of the Preserve's Units, many of the drilling and production operations are anticipated to follow the existing trend for siting from surface locations outside the Preserve to access hydrocarbons beneath the Units using directional drilling technology. For some units, however, like the Big Sandy Creek Unit, that are greater in size, some exploratory and development wells are expected to be sited within the Unit. The NPS acknowledges that the RFD is based solely on available production data and that more or less wells could be drilled.

Seismic exploration conducted in the Big Sandy Creek Unit includes three two-dimensional surveys from 1981-1983 covering 14.58 miles, and a three-dimensional survey completed in 2004 over most of the Unit.

The trend over the past 5 years for drilling wells to produce oil and gas underlying the Preserve is towards directionally drilling from surface locations outside the Preserve to bottomhole targets beneath the Preserve. From 1998 through 2004, there were no wells drilled within the Preserve. However, 19 directional wells were drilled from surface locations outside the Preserve to reach bottomholes inside the Preserve. There are currently 3 directional wells developing hydrocarbons from surface locations outside the Big Sandy Creek Unit to bottomholes beneath the Unit, and a fourth well is being drilled. The surface locations of these four wells are approximately 7,500 to 15,000 feet from the Black Stone B1 and D1 wells.

There is one abandoned wellpad that pre-existed the establishment of the Preserve that occupies 4.4 acres**.** Three natural gas transpark pipelines ranging in size from 24 to 31 inches cross the Unit within a common corridor that occupies 55.8 acres. These lines were constructed from 1944 through 1952. The right-of-way existed prior to establishment of the Preserve, and acquisition of the surface estate was made subject to the encumbrance. Currently, there are 2 additional new well proposals in the very early stages of planning for siting within the Unit.

Under Alternative B, Proposed Action, if the Black Stone B1 and D1 wells were drilled and hydrocarbons are discovered and produced, it could result in a negligible, beneficial impact on local and regional economies. Timber productivity would be lost on up to 16.3 acres until the wells are plugged and the project areas are reclaimed.

Cumulative Impacts: Increased exploratory drilling activity and new field development from 3-D seismic in and adjacent to the Unit, would essentially be offset by the overall decline of drilling activity (and production) in the analysis area, resulting in an overall negligible, beneficial impact on local and regional economies.

Because of the low intensity of impact, this topic is being dismissed from further analysis in the EA.

Environmental Justice

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate

environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed action would not have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance (1998). Therefore, environmental justice was dismissed as an impact topic in this EA.

Prime and Unique Farmlands in the Unit

As a result of a substantial decrease in the amount of open farmland, Congress enacted the Farmland Protection Policy Act (Public Law 97-98). In August 1980, the Council on Environmental Quality directed that federal agencies must assess the effects of their actions on prime or unique farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, timber, and oil seed; unique farmland is defined as soil that produces specialty crops such as fruits, vegetables, and nuts. Prime and unique farmland soils are those that are actively being developed and could be converted from existing agricultural uses to nonagricultural purposes, as described above. The NPS reviewed soils maps and consulted with the local Natural Resource Conservation Service office to confirm that there are no prime or unique farmlands located within the Unit that would be affected by the proposed operation; therefore, this topic was dismissed as an impact topic in this EA.

Air Quality in the Unit

Air quality in the region is influenced by activities occurring in the Beaumont/Port Arthur/Orange and Houston/Galveston airsheds. Industrialization and urbanization in these airsheds are major sources of emissions. The primary pollutants transported by the Beaumont/Port Arthur/Orange airshed are volatile organic compounds (VOCs) and nitrates of oxygen (NO_x). Other air pollutants that could affect the Unit and public health include carbon monoxide (CO), sulfur dioxide (SO_2), hydrogen sulfide (H_2S), and particulate matter.

Impacts from In-Park Oil and Gas Operations: Under Alternative B, Proposed Action, the Black Stone B1well would be directionally drilled from a surface location approximately 300 feet from the eastern boundary of the Unit, and the Black Stone D1 well would be directionally drilled from a surface location approximately 715 feet from the western boundary. The wellbores would cross into the Unit at depths of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit. There would be no impacts on the Unit's air quality from the subsurface oil and gas operations in the Unit.

Impacts from Connected Actions: Ground-disturbing activities associated with access road maintenance, construction and maintenance of well/production pads and gathering lines; the use of vehicles and other machinery used to drill the wells; and routine maintenance activities during production would result in increased particulates in the vicinity of the activities. Emissions of particulate matter, nitrogen oxides, carbon monoxide, carbon dioxide, and sulfur dioxide would be greatest during the short-term drilling and workover operations due to increased use of vehicles and large gasoline and diesel engines used to power the drill rig, pumps, and auxiliary equipment. Comstock's Applications to the NPS for the Black Stone B1

and D1 wells state that they anticipate that there will be 15 parts per million (ppm) H_2S in the Woodbine Formation. This concentration should not pose a health or safety risk. Texas RRC Statewide Rule 36 applies to operations in hydrogen sulfide areas. The rule does not apply where concentrations in the system are less than 100 ppm. Prevailing winds would carry some pollutants into the Unit. Impacts would be greatest during the 80-day drilling phase for each well (160 days total), resulting in negligible to minor adverse effects on air quality in the Unit, localized near the well sites. If the wells are placed in production, emissions would continue but at reduced levels, with localized, long-term, negligible, adverse impacts on air quality in the Unit.

Cumulative Impacts: Vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, recreational activities including hunting in and outside the Unit, and forestry operations adjacent to the Unit would result in localized, short- to long-term, negligible to minor, adverse impacts on air quality; but, overall, air quality in the airshed is expected to be maintained or improved, and to remain within state and federal standards.

Because of the low intensity of impact, this topic is being dismissed from further analysis in the EA.

Lightscape Management in and outside of the Unit

During the drilling of the Black Stone B1 and D1 wells, lighting on the derrick, rig floor, and wellpads would be necessary for drilling at night to provide for worker safety. If the wells are placed in production, there would be limited lighting on the production facilities.

There are no NPS-managed overnight camping facilities or other visitor use developments within the analysis area; but there are several private developments located within the analysis area of the Black Stone D1 well. These include a small private camping facility located north-northeast of the Black Stone D1 wellsite, on the northeast side of FM 1276; private residences on the opposite side of FM 1276 near the access road entrance to the Black Stone D1 site; and a mobile home trailer used as a hunting camp located approximately 300 feet southwest of the proposed Black Stone D1 wellsite. This structure, and its attendant lighting, would likely be moved at the start of wellpad construction.

Impacts from In-park Oil and Gas Operations: Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be directionally drilled from surface locations of approximately 300 feet from the eastern boundary of the Unit (Black Stone B1), and approximately 715 feet from the western Unit boundary (Black Stone D1). The wellbores would cross into the Unit at a depth of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit. The subsurface oil and gas operations in the Unit would result in no impacts on the Unit's lightscape.

Impacts from Connected Actions: The introduction of artificial light is not expected to adversely affect visitors in the Unit because of the lack of visitor use developments within the analysis area.

Impacts outside the Unit: The introduction of artificial lighting during the drilling phase would be more pronounced in the area immediately surrounding the wellheads on the lands adjacent

to the Unit; but would be substantially reduced over the producing life of the wells. This could result in localized, short- to long-term, beneficial and adverse impacts on lightscapes.

Cumulative Impacts: Vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, recreational activities including hunting in and outside the Unit, development near the Unit boundary, and forestry operations adjacent to the Unit could result in localized, short- to long-term, negligible to minor, adverse impacts on lightscapes.

Because of the low intensity of impact, this topic is being dismissed from further analysis in the EA.

Geology and Soils in the Unit

The geology and soils in the Unit within 1,500 feet of the proposed Black Stone B1 well/production pad location are described as Doucette Loamy Fine Sand and Pinetucky Fine Sandy Loam with slopes of 1 to 5 percent. The Doucette series consists of deep, well drained, moderately permeable soils on uplands in the Coastal Plain. They formed in sandy and loamy sediment of Pleistocene age, mainly of the Willis Formation. The Pinetucky series consists of deep, well drained, moderately permeable soils on uplands. They formed in loamy sediment of Pleistocene age.

The geology and soils in the Unit within 1,500 feet of the proposed Black Stone D1 well/production pad location are described as Hatliff Loam and Pinetucky Fine Sandy Loam. The Hatliff series consists of deep, moderately well drained, moderately rapidly permeable soils on flood plains. They formed in deep, loamy, and sandy alluvial sediment. Slope ranges from 0 to 2 percent but is mostly less than 1 percent. The Pinetucky series is described above. (USDA Soil Conservation Service)

Impacts from In-park Oil and Gas Operations: Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be directionally drilled from surface locations of approximately 300 feet from the eastern boundary of the Unit (Black Stone B1), and approximately 715 feet from the western Unit boundary (Black Stone D1). The wellbores would cross into the Unit at a depth of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit; therefore, there would be no impacts on the Unit's geology and soils from the subsurface oil and gas operations in the Unit.

Impacts from Connected Actions: The potential for surface subsidence caused by the production of hydrocarbons is not a concern in the vicinity of the Preserve. The hydrocarbon producing zones are deep and have moderate porosity. There is a long history of oil and gas production in the area without evidence of subsidence occurring.

To evaluate whether the proposed activities outside the Unit could impact geology and soils in the Unit, the NPS considered types and volumes of contaminants that would be present at the well/production site, the probability of release, and the potential for migration into the Unit.

There would be low potential for impacts to geology and soils in the Unit from proposed well/production pad preparation through the use of silt screening and hay bale erosion control

techniques proposed to be deployed by Comstock during construction activities at both proposed locations.

There would be very little potential for impacts to geology and soils in the Unit from the drilling and production activities at the Black Stone B1 site because sheet flow drainage from the proposed well/production location is initially away from the Unit toward the northwest. Water-transported sediments from the site would travel downhill to a drainage that joins an unnamed creek that leads to Big Sandy Creek. A roadside drainage associated with FM 1276 and the road itself would serve as a buffer between the proposed site and the Unit boundary There would be a low potential for migration of contaminants into the Unit from the Black Stone B1 well location; and if it were to occur, there would be ample time and space to respond to even a major release before there would be impacts on geology and soils in the Unit. Potential for adverse impacts on the Unit's geology and soils would be negligible from drilling and production of the Black Stone B1 well over the short or long-term.

There would be potential for negligible to minor impacts to geology and soils in the Unit due to sheet flow drainage from the Black Stone D1 site. This sheet flow is initially away from the Unit toward the east. If water-transported sediments are not captured by erosion control screening and hay bales erected around the location, displaced sediments from the site would travel downhill to a drainage feature that leads to Big Sandy Creek which is located approximately 900 feet east of the wellpad. No manmade barriers or structures exist that would impede sheet flow from reaching area drainages that lead to Big Sandy Creek. Application of erosion control and operational mitigation measures identified in Table 2 are expected to be adequate to protect the geology and soils within the Unit. If a spill were to occur, there should be ample time and space to respond to even a major release before there would be impacts on the Unit.

Cumulative Impacts: Vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, forestry operations adjacent to the Unit, development near the Unit boundary, and weather events could result in localized, short- to long-term, negligible to minor, adverse impacts on geology and soils.

Because of the low intensity of impact, this topic is being dismissed from further analysis in the EA.

Water Resources, Floodplains, and Wetlands in and outside of the Unit

The proposed Black Stone B1 location is situated on uplands approximately 7,500 feet east of the Big Sandy Creek. There are no floodplains, wetlands, special aquatic sites, or "other waters of the United States" in the analysis area. A 100 foot section of an existing logging road would be used to gain access to the proposed wellpad that crosses a drainage ditch associated with FM 1276. The described access road does not cross any creeks, streams, or waterways, considered as jurisdictional waters of the U.S. The proposed Black Stone B1 gathering line corridor does not appear to cross any drainage features, streams, or creeks. According to the Texas Commission on Environmental Quality, usable-quality water occurs from the land surface to a depth of 1,850 feet; the interval from land surface to a depth of 800 feet contains water of superior quality.

The proposed Black Stone D1 wellpad is situated near the base of a hillside, and changes from dry uplands on the western half of the site to wetlands on the eastern half. There are floodplains, probable wetlands, possible special aquatic sites, and "other waters of the United

States" in the analysis area. A 4,224-foot section of an existing logging road that extends southwest from FM 1276 would provide access to the Black Stone D1 wellpad. Although the access road does cross several culverted drainages, it appears not to cross any creeks, streams, or waterways, considered jurisdictional waters of the U.S. Access road culverts were constructed to control erosion damages resulting from area sheet flow. The proposed 8,200-foot long D1 gathering line corridor would extend north and crosses several unnamed drainages, but these also appear not to be jurisdictional waters of the U.S. According to the Texas Commission on Environmental Quality, usable-quality water occurs from the land surface to a depth of 1,750 feet; the interval from land surface to a depth of 800 feet contains water of superior quality

Impacts from In-Park Oil and Gas Operations: Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be directionally drilled from surface locations of approximately 300 feet from the eastern boundary of the Unit (Black Stone B1), and approximately 715 feet from the western Unit boundary (Black Stone D1). The wellbores would cross into the Unit at a depth of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit; therefore, there would be no impacts on the Unit's water resources (including aquifers), floodplains, or wetlands from the subsurface oil and gas operations in the Unit.

Impacts from Connected Actions: The proposed surface casing and cementing programs, site locations, site designs, and mitigation measures Comstock would implement during the drilling and production activities are anticipated to confine impacts to the well/production pads. There would be very little potential for impacts in the Unit from the drilling and production activities at the Black Stone B1 site due to sheet flow drainage, as described under "Geology and Soils in the Unit," above. There would be a low potential for migration of contaminants into the Unit from the Black Stone B1 well location; and if it were to occur, there would be ample time and space to respond to even a major release before there would be impacts in the Unit. Therefore, potential for adverse impacts on the Unit's water resources, floodplains and wetlands would be negligible from drilling and production of the Black Stone B1 well over the short or long-term.

There would be potential for negligible to minor, adverse impacts to water resources, floodplains and wetlands in the Unit due to sheet flow drainage from the Black Stone D1 site, as described under the heading "Geology and Soils in the Unit," above. Application of erosion control and operational mitigation measures identified in Table 2 are expected to be adequate to protect these resources within the Unit. If a spill were to occur, there should be ample time and space to respond to even a major release before there would be impacts on the Unit.

Impacts outside the Unit: As stated in the above section on impacts from connected actions, **t**he proposed surface casing and cementing programs, site locations, site designs, and mitigation measures Comstock would implement during the drilling and production activities are anticipated to confine impacts to the well/production pads. The potential for release and transport of oil or gas, brine water, and other contaminating or hazardous substances would be unlikely. While the NPS anticipates there would not be any impact to water resources in the analysis area around the proposed Black Stone B1 well/production pads, there could be negligible to minor, adverse impacts to floodplains or wetlands at the Black Stone D1 site due to sheet flow drainage transporting any released contaminants into floodplains and possible wetlands located within the analysis area outside the Unit.

Cumulative impacts: Vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, forestry operations adjacent to the Unit, development near the Unit boundary, and weather events could result in localized, short- to long-term, negligible to minor, adverse impacts on water resources, floodplains or wetlands.

Because of the low intensity of impact, this topic is being dismissed from further analysis in the EA.

Vegetation in the Unit

The vegetation in the Unit is mapped as Pinus *taeda-Quercus* (*laurifolia, falcate, stellata*) Forest Alliance (PBS&J, 2003). This alliance comprises approximately 42 percent of the Unit. The overstory is dominated by loblolly pine (*Pinus taeda*). Other important species in the overstory include sweetgum (*Liquidambar styraciflua*), shortleaf pine (*Pinus echinata*), and post oak (*Quercus stellata*). The midstory is dominated by yaupon holly (*Ilex vomitoria*), with smaller individuals of the overstory species also present. The shrub layer consists of American beautyberry (*Callicarpa Americana*), sweetgum and red bay *(Persea palustris*). Dominant herbaceous layer species include yaupon holly, Virginia creeper (*Parthenocisus quinquefolia*), and Small's greenbrier (*Smilax smallii*).

Impacts from In-park Oil and Gas Operations: Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be directionally drilled from surface locations approximately 300 feet from the eastern boundary of the Unit (Black Stone B1), and approximately 715 feet from the western Unit boundary (Black Stone D1). The wellbores would cross into the Unit at a depth of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit; therefore, there would be no impacts on the Unit's vegetation from the subsurface oil and gas operations in the Unit.

Impacts from Connected Actions: The southwestern boundary of the Black Stone B1 production pad would be approximately 100 feet from the Unit boundary. Potential impacts to vegetation in the Unit from construction-related activities would be localized, and buffered by growing timber and FM 1276, and mitigated as described in Table 2, Mitigation Measures. Low gradient sheet flow drainage from the well site is initially away from the Unit with the pathway of migration into the Unit located northwest of the wellpad buffered by FM 1276 and its drainage system. To evaluate whether the proposed activities outside the Unit could impact vegetation in the Unit, the NPS considered types and volumes of contaminants that would be present at the well/production site, the probability of release, and the potential for migration into the Unit. There would be a low potential for migration of contaminants into the Unit; and if it were to occur, there would be ample time and space to respond to even a major release before there would be impacts on vegetation in the Unit. Potential adverse impacts to the Unit's vegetation from drilling and production of the Black Stone B1 well over the short- and long-term are expected to be negligible in intensity.

The southeastern boundary of the Black Stone D1 wellpad is approximately 515 feet from the Big Sandy Creek Unit boundary. Potential impacts to vegetation in the Unit from construction-related activities would be localized and mitigated by Comstock's techniques listed in Table 2. Low gradient sheet flow drainage from the well site is in a southerly and easterly direction into an unnamed drainage feature that is oriented north and south in reference to the proposed well site, and is located within 100 feet of the eastern edge of the wellpad. The drainage feature

connects with a creek that leads to Big Sandy Creek at a point approximately 625 feet south of the wellpad. The Black Stone D1 wellpads west corner is located approximately 300 feet north of an unnamed flowing creek that leads into Big Sandy Creek. To evaluate whether the proposed activities outside the Unit could impact vegetation in the Unit, the NPS considered types and volumes of contaminants that would be present at the well/production pad, the probability of release, and the potential for migration into the Unit. There would be a low potential for migration of contaminants into the Unit; and if it were to occur, there should be ample time and space to respond to even a major release before there would be impacts on vegetation in the Unit. Potential adverse impacts to the Unit's vegetation from drilling and production of the Black Stone B1 well over the short- and long-term are expected to be negligible to minor in intensity.

Cumulative Impacts: Existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, and forestry operations adjacent to the Unit could result in localized, negligible to minor, adverse impacts on vegetation.

Because of the low intensity of impact, this topic is being dismissed from further analysis in the EA.

Fish and Wildlife in and outside of the Unit

The abundant and diverse vegetation of the Preserve supports aquatic and terrestrial habitats for a variety of fish and wildlife. Sixty species of mammals are either documented or believed to inhabit the Preserve. Birds are the most visible and diverse group of vertebrate fauna found in the Preserve. Currently, 176 species have been documented. Approximately 85 species of reptiles and amphibians are believed to inhabit the Preserve (Harcombe et al., 1986). Ninety-two species of fish are believed to inhabit Preserve waters. A recent comprehensive inventory of invertebrates documented over 1800 species (Bordelon and Knudson, 1999).

The Black Stone B1 project area is centered on an abandoned oil well location. The clear cut pad is situated in a pine plantation and is adjacent to FM 1276. Approximately 80 percent of the site is clear of trees and the south-central portion of the proposed wellpad is barren of vegetation. A grassy area north of the wellpad is dominated by upland herbaceous plant species including Bermuda grass, broom-sedge, and cudweed. Vegetation seen along the perimeter of the wellpad that survived a recent clear cut timber operation is described as second growth-loblolly pine and sweetgum forest with stands averaging 30 or 40 feet in height. Due to the less diverse and sparse vegetation, it is anticipated that the project area would support a low diversity of wildlife.

The Black Stone D1 project area is on an old homestead site used primarily as a hunting camp. The wellpad is situated in an area that is rich in plant diversity described as mixed pine-hardwood forest on uplands and mixed hardwood forest on bottomlands. The wellpad would occupy an area described as dry uplands in the western half and wetlands in the eastern half of the site (Blanton and Associates). Shade trees (black walnut and a pecan tree) are located in the open meadow area in the vicinity of the hunting camp. Large oaks, sweetgum trees, and loblolly pines are a few of the dominant tree species found at the Black Stone D1 well location. The eastern section of the location is dense and contains trees identified as water oak, swamp chestnut, and American holly. Private lands west of the site showed evidence of a recent clear cut. Due to the existence of abundant plant diversity and vegetation as well as the proximity to

Big Sandy Creek at the Black Stone D1 well location, it is anticipated that the project area adjacent to the Unit would support a moderately high diversity of wildlife.

Impacts from In-Park Oil and Gas Operations: Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be directionally drilled from surface locations of approximately 300 feet from the eastern boundary of the Unit (Black Stone B1), and approximately 715 feet from the western Unit boundary (Black Stone D1). The wellbores would cross into the Unit at a depth of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit; therefore, there would be no impacts on the Unit's fish and wildlife from the subsurface oil and gas operations in the Unit.

Impacts from Connected Actions: Because there are no bodies of water within the Black Stone B1 analysis area, the proposed Black Stone B1 well would have no impact on fish resources in the Unit. The proposed surface casing and cementing programs, site locations, site designs, and mitigation measures Comstock would implement during the drilling and production activities are anticipated to confine impacts to the well/production pads. The potential for release and transport of oil or gas, brine water, and other contaminating or hazardous substances would be low. Elevated noise, as described under the Natural Soundscape in the Unit discussions in Section 3 of this EA, could extend into the Unit. Elevated noise would be greatest during the 80-day drilling phase, but noise levels would be substantially lower over the producing life of the well. Elevated noise levels could displace wildlife, but most wildlife is expected to return after becoming acclimated to some noise disturbance. Displaced wildlife could increase competition in adjacent areas over the short-term. These effects are expected to result in localized, short-term, negligible, adverse impacts on wildlife in the Unit.

Because Big Sandy Creek and an unnamed creek are located within the Black Stone D1 analysis area, the Proposed Action may have an effect on fish resources in the Unit. The proposed surface casing and cementing program, site location, site design, and mitigation measures Comstock would implement during the drilling and production activities are anticipated to confine impacts to the site itself. The potential for release and transport of oil or gas, brine water, and other contaminating or hazardous substances would be related to the potential for sheet flow to carry sediment or other contaminants from the proposed site into the waters of the Unit as discussed in the above sections on Geology and Soils in the Unit; Water Resources, Floodplains and Wetlands in and outside of the Unit; and Vegetation in the Unit. Therefore the NPS believes there is the potential for negligible to minor impacts on the fish resources within the Unit. Elevated noise levels affecting wildlife in the area could extend into the Unit from the Black Stone D1 site, but would be attenuated more by vegetation before reaching the Unit than in the case of the Black Stone B1 site. This effect is expected to be negligible in intensity, short term, and localized.

Impacts outside the Unit: The Black Stone B1 and D1 access roads that occupy approximately 2.97 acres, well/production pads on up to 7.14 acres, and 9,000 feet of gathering would result in the short- to long-term loss of habitat and displacement of wildlife. Elevated noise, particularly during the drilling phase, could displace wildlife, but most wildlife is expected to return after becoming acclimated to some noise disturbance. Displaced wildlife could increase competition in adjacent areas over the short-term. A temporary alteration of habitat would occur while the gathering line is being buried, and until the surface is reclaimed. The potential for leaks and spills exists for all phases of oil and gas activities; however, the proposed

surface casing and cementing programs, site locations, site designs, and mitigation measures Comstock would implement during the drilling and production activities are anticipated to confine impacts to the well/production pads. The potential for release and transport of oil or gas, brine water, and other contaminating or hazardous substances would be unlikely. Impacts to wildlife outside the Unit would be localized, short- to long-term, and adverse.

Cumulative Impacts: Vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, recreational activities including hunting in and outside the Unit, development near the Unit boundary, and forestry operations adjacent to the Unit could result in localized, negligible to minor, adverse impacts on fish and wildlife.

Because of the low intensity of impact, this topic is being dismissed from further analysis in the EA.

Threatened and Endangered Species, and Other Species of Management Concern in the Unit

Under NPS policy, the proposed operations would qualify for an exemption with no mitigation. Under this scenario, actions by the NPS with respect to the Endangered Species Act (1973) are non-discretionary. The wells would originate on lands located outside of the Unit, and the wellbores would cross through the Unit at a sufficient depth to not pass through usable quality water zones to extract nonfederally-owned hydrocarbons from beneath the Unit. Therefore, the NPS has no Section 7 responsibility, nor authority, associated with the Black Stone B1and D1 wells for the proposed in-park operations for which a 9.32(e) exemption is being evaluated. As part of the NEPA analysis, however, the NPS is providing the following analysis of the effects of the connected actions on threatened the Unit. Impacts on Federally-listed threatened and endangered species outside the Unit are discussed in Section 3 under the heading Impact on Adjacent Landowners, Resources, and Uses.

A list of threatened, endangered, and State-identified rare species that may occur in Polk County is provided in Appendix A. Also in the Appendix is a brief description of the habitats required by these species. The list includes four Federally-listed threatened and endangered species, and 17 state-listed species. There is no Federally-designated critical habitat in or near Big Thicket National Preserve.

Impacts from In-Park Operations: Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be directionally drilled from surface locations at a minimum distance of approximately 300 feet from the eastern boundary of the Unit (Black Stone B1), and approximately 715 feet from the western Unit boundary (Black Stone D1). The wellbores would cross into the Unit at a depth of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit; therefore, there would be no impacts on threatened or endangered species in the Unit from the subsurface oil and gas operations in the Unit.

Impacts from Connected Actions: The Preserve has not documented any Federally or State-listed threatened and endangered species in the area of the proposed project components. During 2003, no federally-listed species were documented in the Big Sandy Creek Unit during vegetation mapping and sampling. Also in 2003, a field survey for red-cockaded woodpeckers

in all but the northern tip of the Unit found no individuals, vocalizations, or cavity trees of these species (DESCO, 2004). The field survey was conducted prior to a 3-D seismic survey by Seismic Assistants, Ltd during 2004. Due to the lack of any Federally or State-listed threatened and endangered species in the area, the proposed Black Stone B1 and D1 wells would have no effect on listed species.

Cumulative Impacts: Vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, recreational activities including hunting in and outside the Unit, and forestry operations adjacent to the Unit could impact threatened or endangered species, and other species of management concern. Over time, protection provided to species of special concern under Current Legal and Policy Requirements would result in maintaining and improving habitat for species of special concern in the Preserve, with cumulative beneficial impacts on species of special concern in the Preserve.

Because there would be no effect, this topic is being dismissed from further analysis in the EA.

Cultural Resources in the Unit

Under NPS policy, the proposed operations would qualify for an exemption with no mitigation. Under this scenario, actions by the NPS with respect to the National Historic Preservation Act of 1966, as amended, are non-discretionary. The wells would originate on non-federal lands located outside of the Unit, and the wellbores would cross through the Unit at a sufficient depth to not pass through usable quality water zones to extract non-federally owned hydrocarbons from beneath the Unit. Therefore, the NPS has no Section 106 responsibility, nor authority, associated with the Black Stone B1and D1 wells for the proposed in-park operations for which a 9.32(e) exemption is being evaluated. As part of the NEPA analysis, however, the NPS is providing the following analysis of the effects of the connected actions on cultural resources within the Unit. Cultural resources outside the Unit are discussed in Section 3 under the heading Impact on Adjacent Landowners, Resources, and Uses.

Impacts from In-Park Operations: Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be directionally drilled from surface locations at a minimum distance of approximately 300 feet from the eastern boundary of the Unit (Black Stone B1), and approximately 715 feet from the western Unit boundary (Black Stone D1). The wellbores would cross into the Unit at a depth of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit; therefore, there would be no impacts on the Unit's cultural resources from the subsurface oil and gas operations in the Unit.

Impacts from Connected Actions: As part of the NEPA analysis, the NPS also considered the impacts of the connected actions on the Unit's cultural resources. The proposed surface casing and cementing programs, site locations, site designs, and mitigation measures Comstock would implement during the drilling and production activities are anticipated to confine impacts to the well/production pads. The potential for release and transport of oil or gas, brine water, and other contaminating or hazardous substances would be unlikely. There would be no historic properties affected in the Unit from the connected actions.

Cumulative Impacts: Vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations,

recreational activities including hunting in and outside the Unit, and forestry operations adjacent to the Unit could impact cultural resources in the analysis area however compliance with the National Historic Preservation Act is anticipated to result in projects undertaken within the Unit having no adverse effect. Indirect impacts on cultural resources in the Unit from drilling and production from directional wells drilled from outside the Unit to beneath the Unit could range from no impact to indirect, localized to widespread, short-to long- term, negligible to minor, adverse impacts.

Because no historic properties would be affected, this topic was dismissed from further analysis in this EA.

Visitor Use and Experience in the Unit

The primary visitor uses that occur in the Unit are picnicking, hiking, and bird-watching. There are no visitor use developments in the Unit within the proposed Black Stone B1 and D1 analysis area.

Impacts from In-Park Oil and Gas Operations: Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be directionally drilled from surface locations of approximately 300 feet from the eastern boundary of the Unit (Black Stone B1), and approximately 715 feet from the western Unit boundary (Black Stone D1). The wellbores would cross into the Unit at a depth of approximately 4,825 feet true vertical depth (TVD) (Black Stone B1), and approximately 5,675 feet TVD (Black Stone D1). Each well would be drilled to target depths of about 17,700 feet TVD, extracting hydrocarbons and other fluids from beneath the Unit. Therefore, there would be no impacts on visitor use and experience within the Unit from the subsurface oil and gas operations in the Unit.

Impacts from Connected Actions: It is unlikely that many visitors would be in the vicinity of the drilling and production activities; therefore, there are no impacts anticipated on visitor use and experience in the Unit from the connected actions.

Cumulative Impacts: Vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, recreational activities including hunting in and outside the Unit, and forestry operations adjacent to the Unit are anticipated to result in localized, short- to long-term, negligible to minor, adverse impacts on visitor use and experience.

Because of the low intensity of impact, this topic is being dismissed from further analysis in the EA.

2.0 ALTERNATIVES

Two alternatives are described and evaluated in this EA, Alternative A, No Action and Alternative B, Proposed Action, Application as Submitted. Analyses for selecting the environmentally preferred alternative and the NPS preferred alternative are also provided. This section concludes with three (3) summary tables comparing the two alternatives.

2.1 Alternative A, No Action

The no action alternative is required under the National Environmental Policy Act (NEPA) and establishes a baseline for comparing the present management direction and environmental consequences of the action alternative. Under no action, the Black Stone B1 and D1 wells would not be drilled.

2.2 Alternative B, Proposed Action, Application as Submitted

Under Alternative B, Comstock would directionally drill the Black Stone B1 and D1 wells as proposed in its applications. Figures 2 and 3 show each well's proposed surface and bottomhole locations, gathering lines to tie into an existing pipeline, existing access roads for the Black Stone B1 and D1 wells in relation to the Big Sandy Creek Unit, and the analysis areas.

Figure 2. Map depicting the proposed surface and bottomhole locations, gathering line, and access road for the Black Stone B1 well in relation to the Big Sandy Creek Unit.

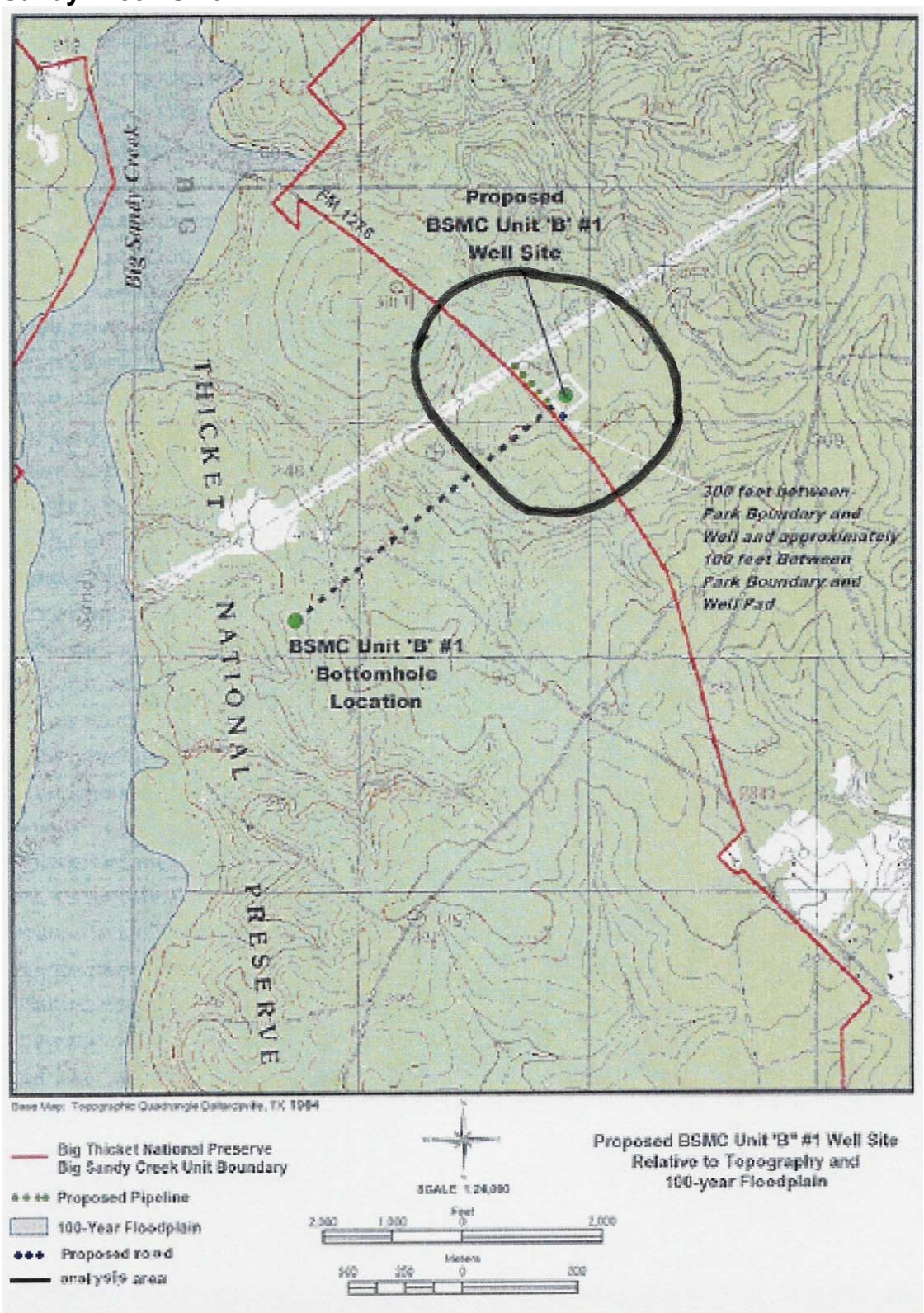
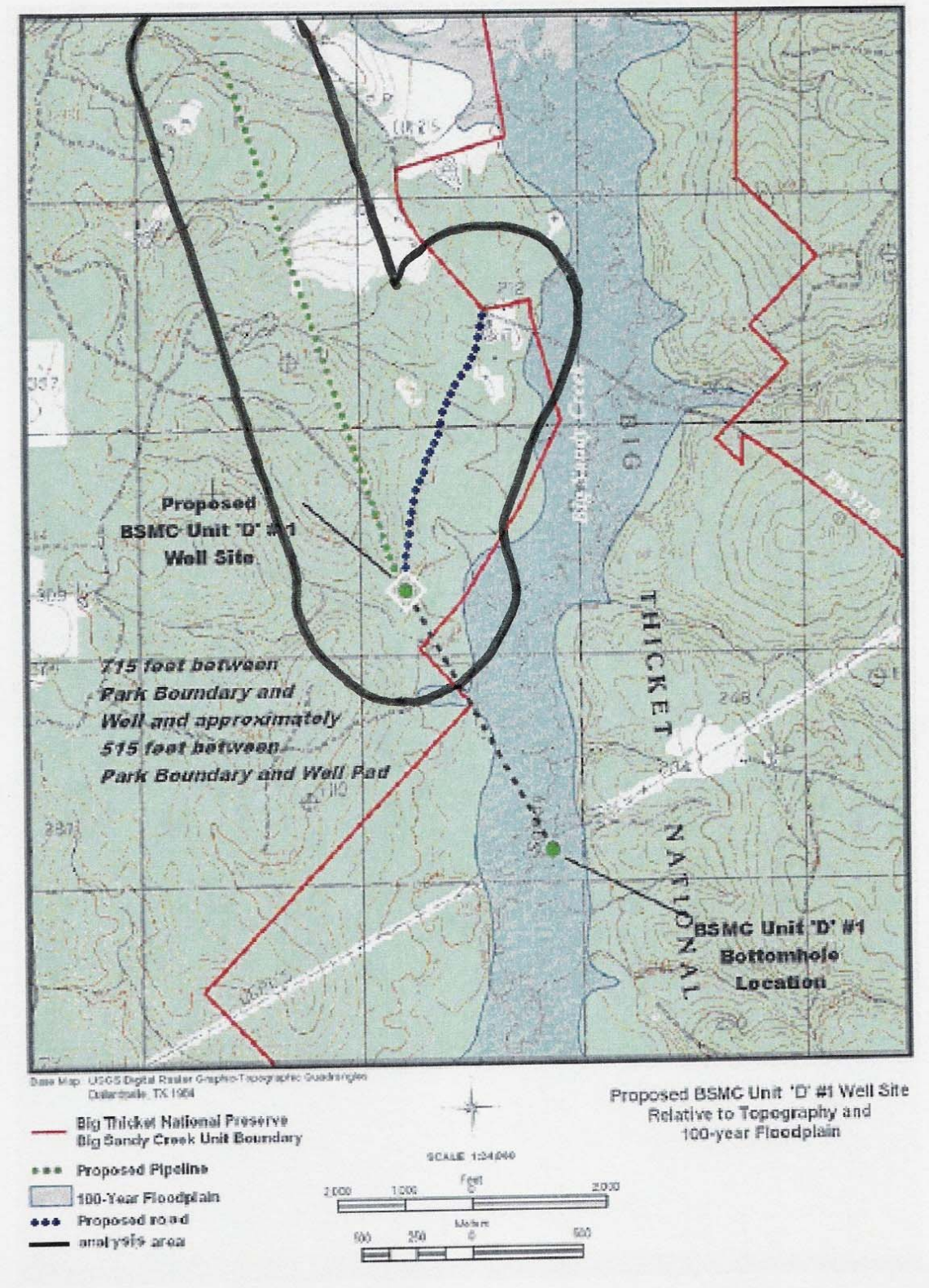


Figure 3. Map depicting the proposed surface and bottomhole locations, gathering line, and access road for the Black Stone D1 well in relation to the Big Sandy Creek Unit.



2.2.1 Location of the Wells

The surface location of the proposed Black Stone B1 well would be:
X = 3,779,505
Y = 407,158
The bottomhole location would be:
X = 3,775,865
Y = 403,773

The surface location of the proposed Black Stone D1 well would be:
X = 3,770,675
Y = 407,134
The bottomhole location would be:
X = 3,773,070
Y = 403,540

Coordinates are in U.S. State Plane Coordinate System, NAD 27, Texas, Central Zone.

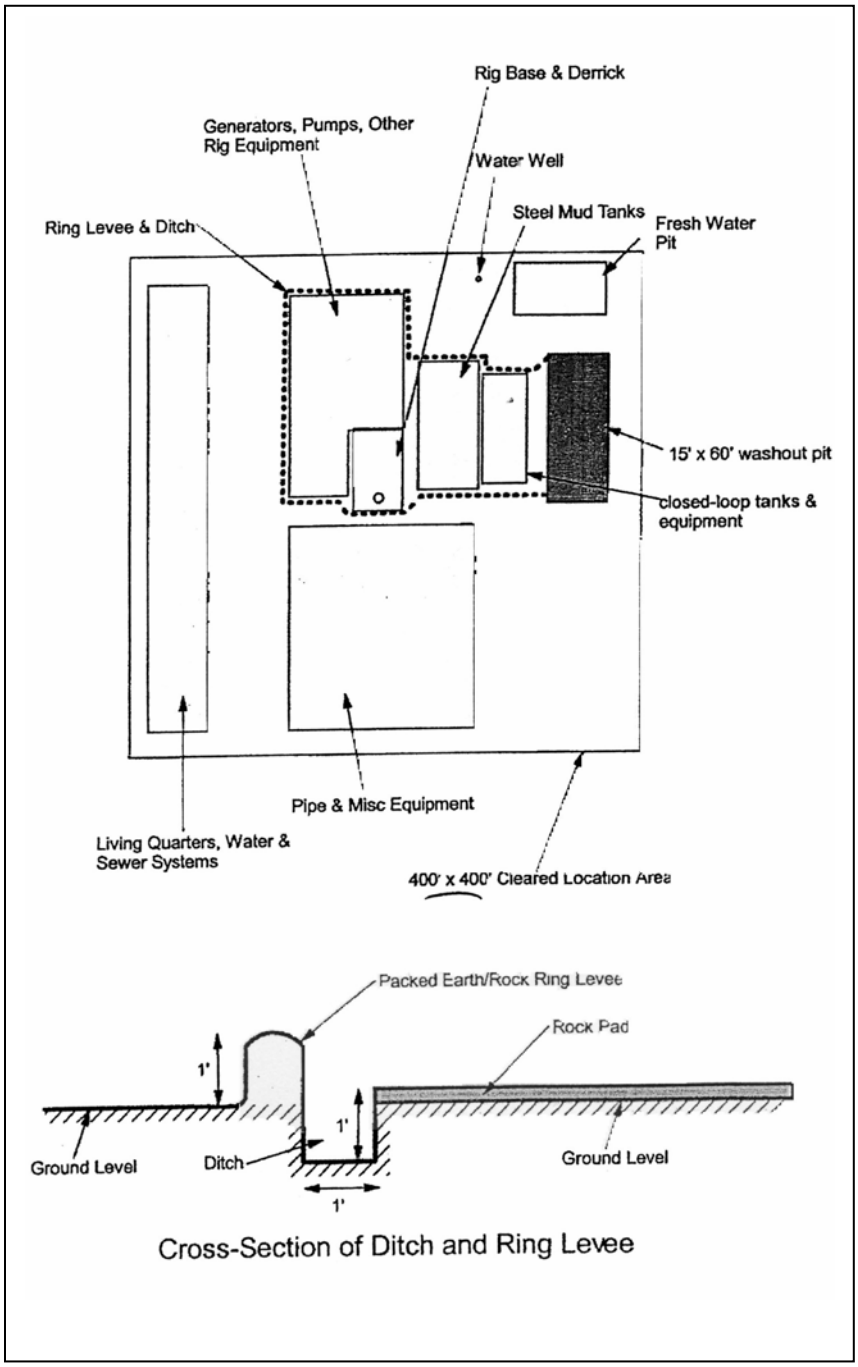
Comstock's Black Stone B1 (east side well) proposed operations inside the Preserve consist of drilling a 12-1/4inch hole from some point below approximately 4,825 feet true vertical depth (TVD) to a casing point of 14,850 feet TVD, setting and cementing 9-5/8inch casing, then drilling a 8-1/2 inch hole to a casing point 15,850TVD, and setting and cementing a 7-3/4 inch liner, then drilling a 6-1/2 inch hole to completion depths in woodbine sands approximately 17,700 feet TVD. The well would then be completed with a 5 inch production liner, or plugged and abandoned as a dry hole.

Comstock's Black Stone D1 (west side well) proposed operations inside the Preserve consist of drilling a 12-1/4 inch hole from some point below approximately 5,675 feet TVD to a casing point of 14,350 feet TVD, setting and cementing 9-5/8 inch casing, then drilling a 8-1/2 inch hole to a casing point 14,850TVD, and setting and cementing a 7-3/4 inch liner, then drilling a 6-1/2 inch hole to target depths of approximately 17,700 feet TVD within woodbine sands. The well would then be completed with 5 inch production liner, or plugged and abandoned as dry hole.

As per Texas Commission on Environmental Quality Form TCEQ-0051 (Depth of Usable-Quality Ground Water to be Protected) usable-quality water occurs from the land surface to a depth of 1800 feet. The interval from the land surface to a depth of 800 feet contains water of superior quality which must be isolated from water in underlying beds. Comstock would comply with all provisions of the Railroad Commission of Texas' statewide oil and gas rules to drill and eventually plug the well to ensure the protection of usable-quality water zones.

Drilling should be completed in approximately 80 days for the Black Stone B1 well and within 80 days for the Black Stone D1 well, each well is scheduled to be drilled during the Fall/Winter of 2004. Water-based drilling mud would be used to a depth of 3,400 feet. Oil-based drilling mud would be used from 3,400 feet to 17,700 feet. All drilling mud and cuttings would be contained in above-ground metal storage tanks as part of a closed loop system. Disposal of drilling fluids will occur offsite or downhole dependent on Comstock obtaining necessary permits and approval. Figure 4 shows the proposed drilling facility layout that is identical for each well.

Figure 4. Black Stone B1 and D1 Proposed Drilling Facility Layout



2.2.2 Access

Access to the Black Stone B1 well would be provided through the use of a 100-foot section of an existing logging road that extends north from FM 1276 and crosses the southern edge of the Black Stone B1 wellpad. Little or no modifications to the logging road would be needed to accommodate Comstock's proposed drilling and production operations.

Access to the Black Stone D1 well would be through the use of an existing two-track road that may have been used as part of a logging operation, but in its current form may be used primarily as access to private property in the area. A locked gate is located across the two-track access road approximately 400 feet southeast from a point where the road intercepts FM 1276. Two large galvanized steel culverts of approximately 36 inches diameter, one galvanized steel culvert of approximately 6 inches, two PVC culverts of approximately 4 inches diameter, two concrete culverts of approximately 6 inches diameter, two black plastic culverts of approximately 8 inches diameter, and one fiberglass culvert of approximately 4 inches diameter, would provide storm water drainage beneath the access road that leads from FM 1276 to the Black Stone D1 drilling and production pad, a distance of 4,224 feet or .8 miles. Access road improvements may be required to accommodate oilfield trucks and drilling equipment for the Black Stone D1 well.

2.2.3 Wellpads

The Black Stone B1 wellpad would measure 400 feet x 400 feet (160,000 sq. ft. or 3.67 acres). The Black Stone D1 wellpad would be irregularly shaped and measures (400 feet x 400 feet) – ((200 feet x 90 feet) / 2) or 3.47 acres. Each wellpad would be mechanically cleared by heavy machinery (bulldozer and maintainer). A rock pad would be developed over 2.4 acres of the wellpads to provide workspace necessary to drill the wells.

The Black Stone B1 well would be sited approximately 300 feet east of the Unit boundary. The wellpad would extend to within 100 feet of the Unit boundary. A 40 foot x 100 foot washout/emergency pit, lined with 12-mil plastic, would be constructed adjacent to the pad site to be used as a retention basin for washing the steel rig tanks and to contain any excess runoff from the area of the rig equipment. A 40 foot x 80 foot unlined fresh-water pit and water well would be placed in the corner of the pad. The 12-mil plastic liner would be removed upon completion of the drilling operation and disposed of in an approved landfill.

The Black Stone D1 well would be sited approximately 715 feet west of the Unit boundary. The wellpad would extend to within 515 feet of the Unit boundary. A 40 foot x 100 foot washout/emergency pit, lined with 12-mil plastic, would be constructed adjacent to the pad site to be used as a retention basin for washing the steel rig tanks and to contain any excess runoff from the area of the rig equipment. A 40 foot x 80 foot unlined fresh-water pit and water well would be placed in the corner of the pad. The 12-mil plastic liner would be removed upon completion of the drilling operation and disposed of in an approved landfill.

Construction of these wellpads would not require fill into waters of the U.S. and therefore would not require a Section 404 permit from the U.S. Army Corps of Engineers.

2.2.4 Gathering Lines

Should the Black Stone B1 well be successfully completed as a producing oil and/or gas well, a 4 to 6-inch diameter sales/gathering line would be constructed to extend 800 feet north of the well to an existing pipeline. The gathering line, of wrapped and welded steel, would be buried to a minimum depth of 3 feet below the surface. Up to .55 acres (800 feet x 30 feet) could be disturbed to install the gathering line.

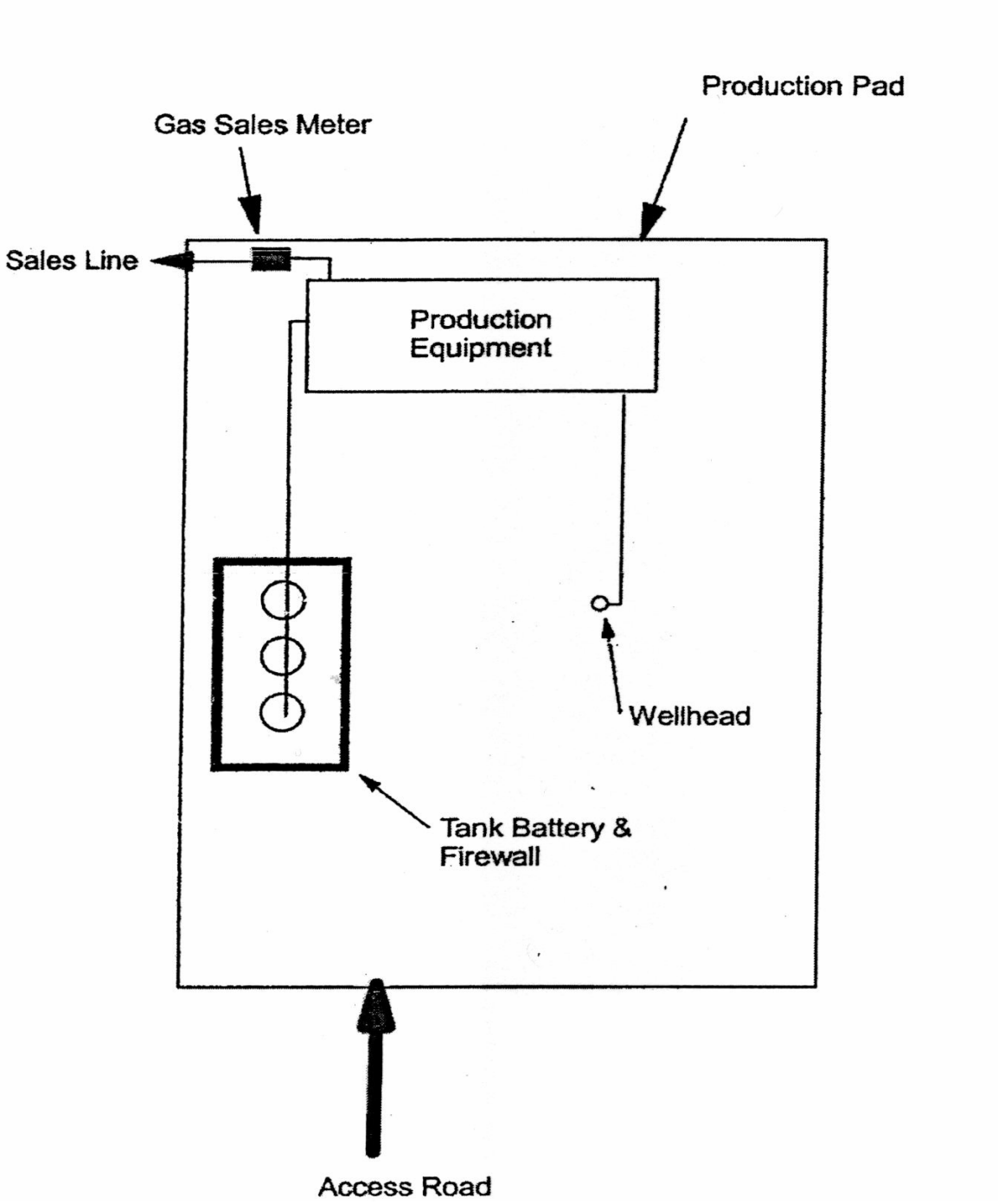
Should the Black Stone D1 well be successfully completed as a producing oil and/or gas well, a 4 to 6-inch diameter sales/gathering line would be constructed to extend 8,200 feet north of the well to an existing pipeline. The gathering line, of wrapped and welded steel, would be buried to a minimum depth of 3 feet below the surface. Up to 5.64 acres (8,200 feet x 30 feet) could be disturbed to install the gathering line.

2.2.5 Production Facilities

The production facility would be developed on the existing rock pad. Features include the wellhead with a Christmas tree valve system, an indirect line heater and separation devices, a glycol dehydration unit, a tank battery consisting of a water tank and two (minimum) condensate tanks, a series of flowlines connecting the components, and a gas sales line and meter. The facility would be developed and maintained according to Comstock's Spill Prevention Control Counter-measures (SPCC) Plan and 40 CFR 112.7. The layout of the proposed production facility is provided in Figure 5. One facility would be constructed for each of the proposed wells. The tank battery would have an earthen firewall (covered with rock to reduce erosion) surrounding the feature that provides secondary containment with a capacity of 1.5 times the capacity of the single largest tank. The approximate height of the firewall would be 2 feet. The off-load connection would have a safety drip device below it to catch any dripping fluid lost during hook-up and disconnection. One tank battery would be constructed for each of the proposed wells.

All oil and water (storage) lines from the production facilities to the tanks would be buried at a depth of 1 foot below the surface.

Figure 5: Black Stone B1 and D1 Proposed Production Facility Layout



2.2.6 Reclamation Plan

Once drilling and completion operations are finished, the portion of the drill sites no longer needed would be reclaimed, and the washout/emergency and water pits would be filled with native soil in accordance with RRC Statewide Rule 8. Upon final abandonment, the equipment and all related materials would be removed, the area returned to its original contour, and the well plugged according to RRC Statewide Rules 13 and 14. The sites would be reclaimed in conformance with the surface use agreement between the surface land owner Molpus Timberlands Management at the Black Stone B1 well location, and Dennis Prejean in the case of the Black Stone D1 well location, and Comstock. The disposal of excess drill fluids and water would occur off-site or downhole depending on obtaining the necessary permits and approvals.

In order to reduce impacts on the human environment, Comstock has incorporated the following mitigation measures listed in Table 2 as part of its application for the proposed operations. While many of the mitigation measures are required by other state and federal requirements, the NPS does not have the regulatory authority under § 9.32(e) to require mitigation under option 1, Exemption with No Mitigation.

Table 2. Mitigation Measures under Proposed Action (Alternative B)

No	Mitigation Measures - Proposed Action (Alternative B)	Resource(s) Protected	Reference in § 9.32(e) Application
1	Conduct an archeological survey of the proposed project areas	archeological resources	Section 6
2	Prepare and comply with a Spill Prevention Control and Countermeasure (SPCC) Plan	all resources, and human health and safety	Section 6
3	Black Stone B1 well, access road, pipeline and production facilities outside of the Big Sandy Creek Unit, well would be sited approximately 300 feet east of the Unit boundary; the well/production pad would extend to within 100 feet of the Unit boundary Black Stone D1 well, access road, pipeline and production facilities outside of the Big Sandy Creek Unit (well would be sited approximately 715 feet west of the Unit boundary; the well/production pad would extend to within 515 feet of the Unit boundary)	all resources and values in Big Thicket National Preserve	Section 4, p.1; Section 6, p. 1; and Section 7, p. 1

No.	Mitigation Measures - Proposed Action (Alternative B)	Resource(s) Protected	Reference in § 9.32(e) Application
4	Black Stone B1 - site of a former oil drilling pad that is clear of trees and requires minor cutting of surrounding timber and use of an existing logging road as access, site chosen to reduce the potential for surface damages on federal lands while achieving exploration objectives Black Stone D1 – site chosen to reduce the potential for surface damages on federal lands while achieving exploration objectives, use of existing access road	soils, water resources, floodplains, wetlands, vegetation	Section 7, pp. 1 & 2
5	Black Stone B1/D1-Schedule construction to avoid rain events	soils, vegetation	Section 7, p. 1
6	Black Stone B1/D1-Construct ditch and 1 foot high ring levee around the wellpad	water resources, vegetation, soils	Section 4, page 6
7	Black Stone B1/D1Construct 40 foot x 100 foot washout / emergency pit and line with 12-mil plastic	water resources, soils, vegetation	Section 4, page 1
Well Drilling			
8	Black Stone B1/D1- Directionally drill well so that wellbore intercepts useable quality groundwater outside of the Preserve	groundwater in Preserve	Section 4, drilling diagram
9	Black Stone B1/D1- Use a closed-loop containerized mud system	water resources, soils, vegetation	Section 4, p.2
10	Black Stone B1/D1- Set surface casing according to State of Texas RRC requirements	groundwater	Section 4, p.3
11	Black Stone B1/D1- Dispose of drilling mud and well cuttings off-site	all natural resources located on and adjacent to wellpad	Section 4, p.2
Production			
12	Black Stone B1/D1- Reduce size of wellpad to accommodate production facility and fill in washout/emergency and water pits	Soils, vegetation, water resources	Section 4, p. 2
13	Black Stone B1/D1- Construct a 2 foot earthen, rock covered firewall around the tank battery with a capacity 1.5 times the largest tank	water resources, soils, vegetation	Section 4, p. 2
14	Black Stone B1/D1- Install a safety drip device on the off-load connection	soils	Section 4, p. 2
15	Black Stone B1/D1 - Use mulching, seeding, silt fences, and hay bales	water resources, soils	Section 7, p.1
16	Black Stone B1/D1- Wind-erosion preventive measures will include watering if dust conditions are determined to be detrimental during construction	air quality, vegetation, water resources	Section 7, p. 1

No.	Mitigation Measures - Proposed Action (Alternative B)	Resource(s) Protected	Reference in § 9.32(e) Application
17	Black Stone B1/D1- Notify regulatory authorities and Big Thicket Superintendent within 24 hours in the event of a release or spill of hydrocarbon condensate, crude oil, or other contaminating substance	all natural resources	Section 4, p. 3
Well Plugging			
18	Follow RRC Statewide rules 13 and 14 for well plugging	all natural resources	Section 4, p. 2

2.3 Alternatives Considered but Dismissed from Further Analysis

Alternative locations were considered for siting the proposed Black Stone B1and D1 wells. For the reasons described below, these alternatives were not subjected to further analysis.

Unit Alternative

Drilling from surface locations inside the Unit was considered. This alternative would have entailed vertical wells from surface locations directly over the targets. Access into the Unit would have required approved plans of operations. Although drilling two wells from inside the Unit is technically feasible, this alternative was judged to be unreasonable in terms of economics, logistics, degree of environmental impact, and time required to implement the project.

NPS Acquisition of the Mineral Rights that are Part of Comstock's Proposal

In the event that a proposed operation cannot be sufficiently modified to prevent the impairment of park resources and values, the NPS may seek to extinguish the associated mineral right through acquisition, subject to the appropriation of funds from Congress. With respect to Comstock's directional drilling proposals, mitigation measures were identified and applied, most notably directional drilling from surface locations outside the Unit. These mitigation measures substantially reduce the potential for adverse impacts to Unit resources and values. As a result, the acquisition of mineral rights was dismissed from further consideration in this EA.

2.4 Environmentally Preferred Alternative

Section 101 of NEPA states that "…it is the continuing responsibility of the Federal Government to…(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice; (5) achieve a balance between population and resource use which would permit high standards of living and a wide sharing of life's amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources" [42 U.S.C. §4321 *et seq.* §101 (b)].

The environmentally preferred alternative for drilling and producing the directional wells are based on these national environmental policy goals. Under Alternative A, No Action, neither well would be drilled. Because there would be no new impacts, Alternative A would provide the greatest protection of area and Unit resources and values. Alternative A meets five of the six criteria (1 thru 4, and 6) and is therefore the environmentally preferred alternative.

Comstock's Proposal, Alternative B, would have greater effects on the environment because of the drilling and production activities. Alternative B meets four of the six criteria (1, 2, 4, and 5). Although mitigating measures would reduce effects to Unit resources and values, there would still be effects, and therefore this alternative would not meet the Park Service's environmental policy goals as well as the No Action Alternative.

2.5 National Park Service Preferred Alternative

The environmentally preferable alternative is Alternative A because it surpasses Alternative B in realizing the full range of national environmental policy goals as stated in §101 of NEPA. However, the NPS preferred alternative is Alternative B, Proposed Action because Comstock holds a valid oil and gas lease right which if developed, would not result in an impairment of park resources and values. The NPS believes this alternative would fulfill its park protection mandates while allowing Comstock to exercise its property right interest.

2.6 Summary of Alternatives

The following tables assess the extent to which each alternative meets objectives in taking action, summarize actions of each alternative, and summarize impacts of each alternative (see Table 3, Table 4, and Table 5 respectively).

Table 3. Extent that Each Alternative Meets Objectives

Objectives	Does Alternative A, No-Action, Meet Objective?	Does Alternative B, Proposed Action, Meet Objective?
Provide Comstock, as the lessee of nonfederal oil and gas mineral interests, access to explore for and develop oil and gas resources in a manner which will assure the natural and ecological integrity of the Preserve.	**No (-)** The well would not be drilled, precluding Comstock access to develop its nonfederal oil and gas mineral interests.	**Yes (+)** Comstock would be issued a § 9.32(e) exemption, enabling it to drill and produce the wells.
Avoid or minimize impacts on Unit resources and values, visitor use and experience, and human health and safety.	**Yes (++)** Without drilling the well, there would be no impacts.	**Yes (+)** Mitigation measures would avoid and minimize impacts.
Prevent impairment of Unit resources and values.	**Yes (++)** Without drilling the well, there would be no potential for Unit resources and values to be impaired.	**Yes (+)** Directional drilling below usable quality ground water within the Unit and application of other mitigation

Objectives	Does Alternative A, No-Action, Meet Objective?	Does Alternative B, Proposed Action, bjective?
		measures would result in no impairment of Unit resources and values.

[1]No-Action alternative is required under NEPA to describe baseline conditions. It is acceptable for the no-action alternative to not meet all of the planning objectives.

Table 4. Summary of Actions

Actions	No-Action	Alternative B sed Action
Access	Access would not be required because the wells would not be drilled.	Comstock would utilize an existing timber road to access the B1 wellpad. Little or no modifications to the road would be required. Comstock would utilize an existing timber road to access the D1 wellpad. Some modifications to the road would be required.
Well and Production Pads	The Black Stone B1 and D1 wells and production pads would not be constructed because the wells would not be drilled.	Construction and maintenance of the B1 well/production pad would require vegetation removal on 3.67 acres; while the D1 well well/production pad would require vegetation removal on 3.47 acres.
Gathering Lines	Gathering lines would not be required because the wells would not be drilled.	Should the B1 well be productive, an 800 foot long sales/gathering line would be constructed to tie into an existing pipeline. Should the D1 well be productive, an 8,200 foot long sales/gathering line would be constructed to tie into an existing pipeline.
Reclamation Plan	No reclamation plan would be needed because the wells would not be drilled.	The wells would be plugged and abandoned in accordance with Railroad Commission of Texas requirements. Surface reclamation would be performed in accordance with leases and surface use agreements.

Table 5. Summary of Impacts

Impact Topic	Alternative A No-Action	Alternative B Proposed Action
Natural Soundscape in the Unit	Under Alternative A, No-Action, the Black Stone B1 and D1wells would not be drilled; therefore, there would be no new impacts on natural soundscape in the Unit. However, existing impacts on the natural soundscape (from bird calls, wind, and rustling leaves) from recreational uses in and outside the Unit, park management functions inside the Unit, oil and gas activities in and outside the Unit, and timber management adjacent to the Unit would result in intermittent, short-term, negligible to moderate, adverse impacts. Cumulative impacts on natural soundscape in and contiguous to the Unit from recreational activities in and outside the Unit, park management functions within the Unit, oil and gas activities in and outside the Unit, and timber management activities adjacent to the Unit boundaries, would result in intermittent, short-term, negligible to moderate, adverse impacts, localized near sources. No impairment to natural soundscape in the Unit would result from implementation of this alternative.	Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be drilled and may be produced. Access road modification, construction and maintenance of gathering lines, well/production pads; drilling and producing the wells; and eventual plugging and reclamation activities would result in short- to long-term, negligible to moderate, adverse impacts on natural soundscape, localized around sources. Cumulative impacts in and contiguous to the Unit would be similar to those described under No Action, with intermittent, short-term, and negligible to moderate, adverse impacts on natural soundscape throughout the Unit, localized near sources. No impairment to natural soundscape in the Unit would result from implementation of this alternative.
Adjacent Landowners, Resources and Uses	Under Alternative A, No-Action, the Comstock Unit B1and D1 wells would not be drilled; therefore, there would be no new impacts on adjacent landowners, resources and uses. However, existing impacts from commercial timber and recreational uses would continue, resulting in localized, short to long-term adverse impacts on air quality, natural soundscape, geology and soils, vegetation, Federally-listed threatened and endangered species, and cultural resources. Cumulative impacts	Under Alternative B, Proposed Action, the Black Stone B1and D1 wells would be drilled and may be completed to produce hydrocarbons. Development of the B1 and D1 wells would convert up to 16.3 acres to oil and gas use, of which an estimated 6.74 acres at the proposed D1 location are prime farmland soils. Construction activities; drilling and producing the well; and eventual plugging and reclamation activities would result in short- to long-term, adverse impacts on air quality, natural soundscape,

Impact Topic	Alternative A No-Action	Alternative B Proposed Action
	from commercial timber, recreational uses, and oil and gas activities, would result in short- to long-term, beneficial and adverse impacts on air quality, natural soundscape, geology and soils, vegetation, Federally-listed threatened and endangered species, and cultural resources on lands adjacent to the Unit.	geology and soils, and vegetation, localized around the project area. However, there would be no effect on Federally-listed threatened and endangered species, or cultural resources. Cumulative impacts from commercial timber, recreational uses, and oil and gas activities would result in short- to long-term, adverse impacts on air quality, natural soundscape, geology and soils, vegetation, Federally-listed threatened and endangered species, and cultural resources on lands adjacent to the Unit.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Methodology

During project scoping, it was determined that the following topics will be carried forward for analysis:

- Natural Soundscape in the Unit
- Adjacent Landowners, Resources and Uses, focusing on an analysis of the following resources and values:
  - Air Quality
  - Natural Soundscape
  - Geology and Soils
  - Vegetation
  - Federally-Listed Threatened and Endangered Species
  - Cultural Resources

This chapter is organized by impact topic. Under each impact topic, the affected environment is described, the methodology for assessing impacts is presented, the impacts under each alternative is given, a cumulative impact analysis is provided and a conclusion is stated. The conclusion section summarizes all major findings and includes an impairment analysis. Impairment analyses are only performed for park resources and values. A description of the NPS mandate to prevent impairment to park resources and values is provided in Section 1.2.1 of this EA (pages 3 and 4).

This section describes direct, indirect, and cumulative impacts under the two alternatives. Impacts are described in terms of context and duration. The context or extent of the impact may be **localized** (affecting the project area) or **widespread** affecting other areas of the Preserve and/or the project area). The duration of impacts could be **short-term**, ranging from days to three years in duration, or **long-term**, extending up to 20 years or longer. Generally, short-term impacts would apply to construction activities and long-term impacts would apply to roads, production operations, and gathering lines. The intensity of impacts is provided only in assessing impacts on park resources and values. The intensity and type of impact is described as negligible, minor, moderate, or major, and as beneficial or adverse. For park resources and values being assessed, impact intensity threshold definitions are provided for negligible, minor, moderate and major. Where the intensity of an impact can be described quantitatively, the numerical data are presented. However, most impact analyses are qualitative.

Cumulative Impacts

This section also assesses cumulative impacts. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7).

The following descriptions of park development and operations, and adjacent land uses provide the basis for analyzing cumulative impacts in this EA. These descriptions should be used in conjunction with the discussion under the heading socioeconomics on pages 13-14 of this EA

that describes past, present, and reasonably foreseeable oil and gas development in the analysis area.

Park Development and Operations. Park developments that support visitor uses in the Big Sandy Creek Unit include three day use areas, one birding hot spot area, and three hiking trails. These developments are located along the western edge and bottom two-thirds of the Unit. The nearest developments are located approximately 2 ¼ miles from the proposed Black Stone B1 well site, and approximately 1¼ miles from the proposed Black Stone D1 well site.

There are several fire monitoring/long-term monitoring plots located in the Unit approximately 1000 to 2000 feet south and west of the proposed Black Stone B1 well location. The monitoring plots typically measure 10 x 10 meters. Monitoring plots are maintained by the Preserve to monitor and gauge the effects of prescribed fire, and to study how Big Thicket vegetation responds to a variety of ecological processes such as forest succession, non-native species invasion and response to disturbances such as tornadoes and global climate change.

Park resource management functions in the Unit include prescribed fire and facility management of visitor use developments. Prescribed fire is used to maintain the natural environment and manage hazardous fuels in high-risk areas. Particulate matter is the primary pollutant of forest fires (Komarek, 1970) and can affect visibility and public health.

Adjacent Land Uses. Of the land uses immediately adjacent to the Preserve, commercial and private forestry account for approximately 95 percent of the land area (Harcombe and Callaway, 1997). Additional uses related to timberlands include encroachment onto Preserve lands, public safety concerns regarding hunting clubs on adjacent timberlands, and public use of timber company roads to access the Preserve (Harcombe and Callaway, 1997).

3.1 Impacts on Natural Soundscape in the Unit

Affected Environment

In 1998, the NPS measured ambient sound levels at 11 locations in the Preserve (Foch, 1999). Sound levels ranged from 35-43 decibels in the Preserve. In the Big Sandy Creek Unit, the ambient sound level along the Big Sandy Horse Trail was 41.2 dBA. The horse trail is located south of the project area, in the south central part of the Unit. According to Foch (1999), background sound levels in most of the Preserve are due to rustling of leaves. Figure 5 compares sound levels recorded at locations in the Preserve with other sounds, including that from a drilling rig at various distances.

Methodology

The report titled “Ambient Sound Levels at Big Thicket National Preserve during March-June 1998” by James D. Foch was used to predict the impacts of each alternative on the natural soundscape in the Unit. Ambient sounds were monitored and recorded at 11 locations within the Preserve to provide a basis for protecting natural soundscapes.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: the impact is barely detectable.
Minor: the impact is slight but detectable.
Moderate: the impact is readily apparent.

Major: the impact is severely adverse.

Figure 6. Sound Level Comparison Chart[1]

How it Feels	Equivalent Sounds	Decibels	Sound Levels at Various Locations in Big Thicket National Preserve
Near permanent damage level from short exposure	Large caliber rifles (e.g., .243, 30-06)	140-160	
Pain to ears	.22 caliber weapon	130-140	
Very loud	Air compressor @ 20 ft. Garbage trucks and city buses	100	
Conversation Stops	Power Lawnmower Diesel truck @ 25 ft.		
Intolerable for phone use	Steady flow of freeway traffic 10 HP outboard motor Garbage disposal	90	
	Near drilling rig Automatic dishwasher Muffled jet ski @ 50 ft. Vacuum cleaner	80	
	Drilling rig @ 200 ft. Window air conditioner outside @ 2 ft.	70	
Quiet	Window air conditioner in room Drilling rig @ 800 ft. Normal conversation	60	
Sleep interference	Quiet home in evening	50	
	Bird calls Drilling rig @ 1500 ft. Library	40	Big Sandy Creek along Big Sandy Horse Trail Jack Gore Baygall Unit Lance Rosier Unit–end of Church House Rd. Turkey Creek Unit on Turkey Creek Trail and at NPS Ranch House Beech Creek Unit along Beech Woods Trail
	Soft whisper	30	
	In a quiet house at midnight Leaves rustling	20	

[1]Modified from Final Environmental Impact Statement, Miccosukee 3-1 Exploratory well, Broward County, Florida (U.S. Department of the Interior).

Impacts on Natural Soundscape in the Unit under Alternative A, No Action

Under Alternative A, No Action, the Black Stone B1 and D1 wells would not be drilled; resulting in no new impacts on the natural soundscape in this area of the Unit. However, existing impacts on the natural soundscape would continue as the result of vehicle traffic in and outside the Unit, occasional prescribed fires in the Unit, and commercial timber activities occurring adjacent to the Unit boundary.

Elevated noise from prescribed fires conducted by the Preserve would be from fire crews and use of trucks, but would be primarily from vegetation burning.

Forestry operations adjacent to the Unit would include the use of chainsaws, log skidders, tractors, etc.

Other sources of noise adjacent to the Unit may be from all-terrain vehicles, aircraft, and firearms.

These activities in and adjacent to the Unit would occasionally result in sounds that exceed the ambient sound levels in the Unit, resulting in localized, intermittent and short-term, negligible to moderate, adverse impacts on the natural soundscape in the Unit.

Cumulative Impacts

Under Alternative A, No Action, cumulative impacts on natural soundscapes throughout the Unit and contiguous areas could result from vehicle use, existing and future oil and gas operations both inside and outside the Unit, the routine maintenance of three transpark oil and gas pipelines, park operations including prescribed fire and maintenance of park developments, recreational activities in and outside the Unit such as horseback riding and playing radios at a high volume, and forestry operations adjacent to the Unit. From 300 feet southwest of the Black Stone B1 well, and within approximately ¾ mile south of the Black Stone D1 well and continuing southward, within most of the Unit with the exception of its southern edge, hunting is seasonally permitted. The Preserve's hunting program attracts the most visitors to the Unit each year. Up to 400 permits are issued each year to hunt in the Unit. Hunters in the Unit and on adjacent lands therefore contribute to seasonal noise in the area. Although seasonal and intermittent, gun-fire produces considerable noise in the range of 130 to 160 dBA, depending on the caliber of the weapon (see Figure 6). As a result of these existing and future activities, cumulative impacts on natural soundscape within and contiguous to the Unit are anticipated to result in intermittent, short-term, negligible to moderate, adverse impacts on the natural soundscape in the Unit, localized near sources.

Conclusion

Under Alternative A, No-Action, the Black Stone B1 and D1 wells would not be drilled; therefore, there would be no new impacts on natural soundscape in the Unit. However, existing impacts on the natural soundscape (from bird calls, wind, and rustling leaves) from recreational uses in and outside the Unit, park management functions inside the Unit, oil and gas activities in and outside the Unit, and timber management adjacent to the Unit would result in intermittent, short-

term, negligible to moderate, adverse impacts. Cumulative impacts on natural soundscape in and contiguous to the Unit from recreational activities in and outside the Unit, park management functions within the Unit, oil and gas activities in and outside the Unit, and timber management activities adjacent to the Unit boundaries, would result in intermittent, short-term, negligible to moderate, adverse impacts localized near sources. No impairment to natural soundscape in the Unit would result from implementation of this alternative.

Impacts on Natural Soundscape in the Unit under Alternative B, Proposed Action

Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be drilled and may be completed to produce hydrocarbons. Each well would be drilled independently with one drilling rig and not concurrently.

Existing impacts on the natural soundscape within the Unit would be similar to Alternative A, No Action, with localized, intermittent and short-term, negligible to moderate, adverse impacts on the natural soundscape in the Unit.

Little or no access road modifications would be required to access the Black Stone B1 location. However, modifications to the .8 mile road leading to the Black Stone D1 wellpad, construction of a 400 foot x 400 foot (3.67 acre) well/production pad (Black Stone B1), construction of the measured (400 feet x 400 feet) – (200 feet x 90 feet) (3.47 acre) well/production pad (Black Stone D1), combined with construction of an 800 foot long gathering line (Black Stone B1) and 8,200 foot long gathering line (Black Stone D1); and routine maintenance activities during production would result in localized and short-term increases in noise associated with vehicle traffic, heavy equipment and ground-disturbing activities. Elevated noise would be greatest during the short-term (approximately 80 day) drilling period needed for each well (160 total). Sound levels could reach 90 decibels on the drill rig. At 1,500 feet from the drill rig, sound levels would approach background levels ranging around 40 decibels (USDI, 1994). Noise levels would attenuate with increasing distance from the source(s). According to Cook and Haverbeke (1974), significant tree cover is known to attenuate noise levels by magnitudes of 18-25 dBA at 300 feet from the source. Elevated noise during the drilling phase would result in localized, short-term, minor to moderate, adverse impacts on natural soundscapes within 1,500 feet of the drilling rig. The elevated noise would extend up to 1,200 feet into the Unit during the drilling phase of the Black Stone B1 well (this location is 300 feet away from the Unit boundary) and 785 feet for the Black Stone D1 well (this location is 715 feet away from the Unit boundary). It is possible that on a calm day, the drilling could be heard farther than 1,500 feet from the drill rig. During the long-term production life of the well, occasional workover operations could occur at five to 10 year intervals and take one to two weeks to complete. Workovers would increase noise levels, but at much lower intensity and duration than drilling a well. Production operations would result in localized, long-term, negligible to minor, adverse impacts on the natural soundscape in the Unit.

Cumulative Impacts

Under Alternative B, Proposed Action, cumulative impacts on the natural soundscape in the Unit would be similar to those described under No Action, with vehicle uses, existing and future oil and gas operations in and outside the Unit, maintenance of three transpark oil and gas pipelines, routine park operations, recreational activities including hunting in and outside the Unit, and forestry operations adjacent to the Unit resulting in intermittent, short-term, negligible to moderate, adverse impacts localized near sources.

Conclusion

Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be drilled and may be produced. Modification of the access roads, construction of gathering line corridors, well/production pads; drilling and producing the wells; and eventual plugging and reclamation activities would result in short- to long-term, negligible to moderate, adverse impacts on natural soundscape, localized around sources. Cumulative impacts in and contiguous to the Unit would be similar to those described under No Action, with intermittent, short- to long-term, negligible to moderate, adverse impacts on natural soundscape throughout the Unit localized near sources. No impairment to natural soundscape in the Unit would result from implementation of this alternative.

3.2 Impacts on Adjacent Landowners, Resources and Uses

Affected Environment

The surface location of the proposed Black Stone B1 well would occupy lands owned and managed by Molpus Timberlands Management. The surface location of the proposed Black Stone D1 well would occupy lands owned and managed by Dennis Prejean. The primary land uses in the project area are timber production, natural gas transport, and hunting.

Historically, the northern one-third of the land in Polk and San Jacinto counties were savannah, woodland, and native pasture; virgin forests covered the southern two-thirds of these counties (USDA, Soil Conservation Service). The woodland class consists of pine, pine-hardwood, and mixed hardwood bottomland forests. Today, woodland covers approximately 855,000 acres or 77 percent of land in Polk and San Jacinto counties (USDA).

The soils in the project area at the Black Stone B1 site are described as Doucette Loamy Fine Sand on 1 to 5 percent slopes, graded Pinetucky and Conroe soils, and strongly sloping Stringtown – Bonwier Association. Also, the Pinetucky Fine Sandy Loam soil type is present within the analysis area. This soil type is classified by the USDA as prime farmland soil. The major soil type mapped at the proposed Black Stone B1 wellpad location is Doucette Loamy Fine Sand it is described as an upland soil formed from sandy and loamy sediments of the Pleistocene-age Willis Formation (USDA). However, as the proposed location for this wellpad is an existing, unused wellpad, the soil had been extensively disturbed and mixed with substrate clay by the construction of the existing pad.

The soils inside the project area at the Black Stone D1 site are described as Hatliff Loam, Pinetucky Fine Sandy Loam, and Pluck and Kian soils. Other soil types outside the Unit boundary present within the analysis area include Choates Loamy Fine Sand, Doucette Loamy Fine Sand, Boykin Loamy Fine Sand, and the Stringtown – Bonwier Association. Hatliff Loam and Pluck and Kian soils are listed as frequently flooded soils. About half of the proposed wellpad and most of the gathering line corridor will impact Pinetucky soils which are classified by the Natural Resource Conservation Service as prime farmland soils. The NPS estimates the area of impact to this soil type at 6.74 acres. This soil type is suitable for timber, crops, hay, or pasture. In well-managed woodland, the major soil limitations to be considered in management of soils are erosion hazard, equipment limitation, seedling mortality, and plant competition (use of equipment is not limited to a particular kind of equipment of time of year); slight for seedling

mortality (expected tree seedling mortality is less than 25 percent); and slight for plant competition (little or no competition with native plants or seedlings is expected) (USDA).

Methodology

The Soil Survey of Polk and San Jacinto Counties, Texas (USDA, Soil Conservation Service); and consultation with Comstock's petroleum engineer are the primary sources of information used to predict the effects of each alternative on adjacent landowners, resources and uses.

Impacts on Adjacent Landowners, Resources and Uses under Alternative A, No Action

Under Alternative A, No Action, the Black Stone B1 and D1 wells would not be drilled; resulting in no new impacts on adjacent landowners, resources and uses; however, existing impacts would continue. Impacts on air quality, natural soundscapes, geology and soils, , vegetation, Federally-listed threatened and endangered species, and cultural resources are described below.

Air Quality. Existing impacts on air quality would continue as the result of vehicle use on lands in and outside of the Unit, recreational activities in and outside of the Unit (including use of all-terrain vehicles, and burning of campfires), park facility management and prescribed fires in the Unit, and commercial timber activities occurring adjacent to the Unit. The use of vehicles and other combustion engines, and fires would emit particulate matter, nitrogen oxides, carbon monoxide, carbon dioxide, and sulfur dioxide, resulting in intermittent, short-term, adverse impacts localized around point sources.

Natural Soundscape. Existing impacts on natural soundscape would continue as the result of vehicle use on lands in and outside the Unit, recreational activities in and outside of the Unit (including use of all-terrain vehicles, and playing radios at a high volume), occasional prescribed fires in the Unit, routine maintenance activities in the Unit, and commercial timber activities adjacent to the Unit. These sources of noise would contribute to intermittent, short-term, adverse impacts localized around point sources.

Geology and Soils. Existing impacts on geology and soils would continue as the result of vehicle use off developed roads outside the Unit, recreational activities outside the Unit (particularly the use of all-terrain vehicles off developed roads), and commercial timber activities adjacent to the Unit. These activities would contribute towards compaction, rutting, and erosion of soil; and potential for contamination of soils from leaks and spills of oil and gas, and other contaminating substances, with short-term, adverse impacts localized near point sources.

Vegetation. Existing impacts on vegetation would continue as the result of vehicle use off developed roads outside the Unit, recreational activities outside the Unit (particularly the use of all-terrain vehicles off developed roads), and commercial timber activities adjacent to the Unit. These activities would contribute towards compaction, crushing and loss of vegetation. Vehicles could import non-native seed. Clearing activities could contribute to the introduction of non-native vegetation. These activities would result in localized, short- to long-term, adverse impacts. Timber activities could also have short- to long-term, beneficial impacts by producing timber and maintaining prime farmland soils.

Federally-Listed Threatened and Endangered Species. Based on available information there are no Federally-listed threatened and endangered species in the analysis area of the proposed sites.

Cultural Resources. Based on available information, there have been no adverse effects on cultural resources within the analysis area adjacent to the Unit.

Cumulative Impacts

The cumulative impact analysis area includes lands contiguous to the Unit.

Air Quality. Cumulative impacts on air quality would result primarily from oil and gas operations in and adjacent to the Unit, timber management adjacent to the Unit, and prescribed burns in the Unit. Future oil and gas development in the Unit under the RFD scenario would be distributed over time. As some oil and gas operations are developed, others would be plugged, abandoned, and reclaimed. Due to the large boundary of the Unit, the spectrum of adjacent land uses which would contribute more appreciably to cumulative impacts includes oil and gas operations of a substantially greater number as compared to existing or reasonably foreseeable operations in the Unit. Other sources of air quality impacts would be from use of vehicles and other combustion engines, leaks and spills from oil and gas operations in and adjacent to the Unit, fires other than prescribed burns, recreational activities in and adjacent to the Unit including burning of campfires, and routine maintenance activities in the Unit including road maintenance and mowing. Cumulative, adverse impacts are expected to be localized near point sources, short-term, and not exceed National Ambient Air Quality Standards (NAAQS) established under the Clean Air Act.

Natural Soundscapes. Cumulative impacts on natural soundscape would result primarily from oil and gas operations in and adjacent to the Unit, timber management adjacent to the Unit, recreational activities in and adjacent to the Unit, prescribed fires in the Unit, aircraft passing overhead, and firearms during hunting season. Sound levels from these sources would range from 41 dBA (approximate ambient sound level in the Unit) to 140 dBA (for gunfire). Cumulative, adverse impacts are expected to be localized near point sources, intermittent and short-term.

Geology and Soils. Cumulative impacts on geology and soils would result primarily from oil and gas operations in and adjacent to the Unit, leaks and spills from oil and gas operations and transpark pipelines, timber management adjacent to the Unit, prescribed burns in the Unit, park developments, and use of all-terrain vehicles off roadways. Cumulative impacts on geology and soils are expected to be localized near developments, with short- to long-term, adverse impacts. In the event of a major spill from a pipeline, impacts could be widespread.

Vegetation. Cumulative impacts on vegetation would result from the same sources as described for geology and soils, resulting in short- to long-term, adverse impacts localized near developments. Similar to the description of cumulative impacts on geology and soils, in the event of a major spill from a pipeline, impacts on vegetation could be widespread.

Federally-Listed Threatened and Endangered Species. Cumulative impacts on Federally-listed threatened and endangered species would result from the same sources as described for natural soudscapes, geology and soils, vegetation, resulting in short- to long-term, adverse impacts localized near developments. It is expected that adjacent lands would continue to be developed with incremental loss of wildlife habitat over the long term.

Cultural Resources. Over time, cultural resources outside the Unit could be incrementally lost over the long-term, with cumulative adverse impacts on cultural resources and traditional cultural practices in the region.

Conclusion

Under Alternative A, No-Action, the Black Stone B1 and D1 wells would not be drilled; therefore, there would be no new impacts on adjacent landowners, resources and uses. However, existing impacts from commercial timber and recreational uses would continue, resulting in localized, short to long-term adverse impacts on air quality, natural soundscape, geology and soils, vegetation; but no effect on Federally-listed threatened and endangered species is expected, and no historic properties would be affected. Cumulative impacts from commercial timber, recreational uses, and oil and gas activities, would result in short- to long-term, beneficial and adverse impacts on air quality, natural soundscape, geology and soils, vegetation, Federally-listed threatened and endangered species, and cultural resources on lands adjacent to the Unit.

Impacts on Adjacent Landowners, Resources and Uses under Alternative B, Proposed Action

Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be drilled and may be completed to produce hydrocarbons. Existing impacts on air quality would be similar to Alternative A, No Action, with localized, short- to long-term, adverse impacts associated with vehicle use, recreational uses, park management activities, and commercial timber practices.

Impacts from access roads, well/production pads, gathering lines; drilling and producing the wells; and eventual plugging/abandonment/reclamation of the Black Stone B1 and D1 wells on air quality, natural soundscapes, geology and soils, vegetation, Federally-listed threatened and endangered species, and cultural resources adjacent to the Unit are described below.

Air Quality. Access road modifications, construction and maintenance of well/production pads and gathering lines would result in localized and short-term increases in particulate matter during ground-disturbing activities, and use of vehicles and other machinery. Emissions of particulate matter, nitrogen oxides, carbon monoxide, carbon dioxide, and sulfur dioxide would be greatest during the short-term (80 days) drilling of each well and workover activities (1 to 2 weeks) due to increased use of vehicles and large gasoline and diesel engines used to power the drill rig, pumps, and auxiliary equipment, resulting in short-term, adverse impacts on air quality, localized near the well sites. Based on calculations by Hennig Production Company, Inc., for Century Resources Land, LLD, total organic compounds (TOC) emitted during a standard drilling operation for an 80-day drilling program would produce approximately 14,226 pounds or 7.1 tons of emissions for each well and 14.2 tons of emissions for 160 days of the combined drilling operations. This figure is well below the emission threshold of 100 tons of total emissions per year. Neither the proposed drilling nor production activities have the potential to exceed this threshold. Prevailing winds are expected to dissipate emissions out of the area. If the wells do not produce, impacts on air quality would return to levels described under the No Action Alternative. However, if the well is placed in production, emissions would continue but at reduced levels.

Natural Soundscapes. Impacts on the natural soundscape on lands adjacent to the Unit would be similar to those described above under Impacts on Natural Soundscapes in the Unit, and result in short- to long-term, adverse impacts on natural soundscape, localized around sources.

Geology and Soils. Development of the Black Stone B1 well would result in the short-term disturbance to geology and soils on up to 3.74 acres (3.67 acres for the 400 foot x 400 foot wellpad and 0.068 acres for the 100 foot long access road) and, if completed to produce hydrocarbons, the long-term occupancy of 4.29 acres, (3.67 acres for the well/production pad, and 0.068 acres for the 100-foot long access road, and approximately .55 acres for the 800 foot x 30 foot gathering line), resulting in the short- to long-term loss of timber productivity by conversion of soils to use for oil and gas development.

Development of the Black Stone D1 well would result in the short-term disturbance to geology and soils on up to 6.37 acres (3.47 acres for the 400 foot x 400 foot – (200 foot x 90 foot)/2) wellpad and 2.9 acres for the 4,224 (.8 mile) foot long access road), and if completed to produce hydrocarbons, the long-term occupancy of 12.01 acres (2.9 acres for the access road, and 3.47 acres well/production pad, and approximately 5.64 acres for the 8,200 footx30 foot gathering line corridor), resulting in the short- to long-term loss of soil productivity and conversion of an estimated 6.74 acres of prime farmland soils to use for oil and gas development.

To construct the Black Stone B1 and D1well/production pads each location would be mechanically cleared and leveled. Rock would be imported to cover 2.4 acres on each pad. Mitigation measures to protect soils during the drilling and production activities include complying with a SPCC Plan, constructing a ditch and levee around the wellpad, constructing a washout/emergency pit lined with 12-mil plastic, using a closed-loop containerized mud system, disposing of drilling mud and well cuttings off-site, constructing a 2-foot firewall around the tank battery with a capacity 1.5 times the largest tank, installing a safety drip devices on the off-load connections, and following RRC Statewide Rules for surface casing and well plugging. After drilling the well, the washout/emergency and water pits would be filled. These measures are intended to minimize and contain any spilled substances. If the wells do not go into production, each location would be reclaimed, resulting in localized, short-term, adverse impacts on geology and soils on adjacent lands.

The proposed oil and gas activities would locally affect soil characteristics by decreasing permeability and increasing erosion and surface runoff. When the well is plugged and abandoned, landowner Molpus Timberlands Management in the case of Black Stone B1, and Dennis Prejean in the case of Black Stone D1, would decide on the best use of the project area.

Vegetation. For the Black Stone B1 well, impacts on vegetation would be similar to those described above for geology and soils. Construction of the well/production pad would require minimal vegetation removal but would occupy a 3.67 acre area. Timber production on up to 3.74 acres would be lost until the well is plugged and abandoned and sites reclaimed. If the well is produced, an additional .55 acres would be disturbed for construction of the gathering line. Therefore, the proposed activities would result in short- to long-term, adverse impacts on vegetation on up to 4.29 acres.

For the Black Stone D1 well impacts on vegetation would also be similar to those described above for geology and soils. Construction of the well/production pad would require minor to moderate vegetation removal on up to 6.37 acres. If the well is produced, an additional 5.64 acres would be disturbed for construction of the gathering line corridor. Timber production on up 12.01 acres would be lost until the well is plugged and abandoned and sites reclaimed. The proposed activities would result in short- to long-term, adverse impacts on vegetation on up to 12.01acres.

Federally-Listed Threatened and Endangered Species. Comstock retained Blanton and Associates to conduct an endangered species survey of the area surrounding the proposed well/production pads, a total of 4,324 feet of access roads, and 9,000 total feet of gathering line corridors. The Black Stone B1 project location is in a managed pine plantation on the north side of FM1276. The Black Stone D1 project location can be described as mixed forest uplands and mixed forest bottomlands, but is located near a managed pine plantation.

In addition to their general habitat review, target site reconnaissance was performed by Blanton and Associates to determine if any listed species were observed at the proposed sites. Field investigations were conducted in April and May of 2004 at the Black Stone B1 site, and in May of 2004 at the Black Stone D1 site. There were no indications of any state or Federally-listed threatened or endangered species found on or in the vicinity of the proposed access roads, well/production pads, or gathering line corridors.

Cultural Resources. The NPS has no authority under 36 CFR § 9.32(e) to require Comstock to contract an archaeological survey in the project area on lands adjacent to the Unit. However, Comstock retained Blanton and Associates to conduct an archeological survey of the proposed well/production pad. Through project design, the Black Stone B1 and D1 wells would avoid impacting any archeological resources.

Cumulative Impacts

Under Alternative B, Proposed Action, cumulative impacts on adjacent landowners, resources and uses on lands adjacent to the Unit would be similar to those described under No Action, with localized, short- to long-term, adverse impacts on air quality, natural soundscape, geology and soils, vegetation, Federally-listed threatened and endangered species, and cultural resources near sources and developments from commercial timber, recreational uses, and oil and gas activities.

Conclusion

Under Alternative B, Proposed Action, the Black Stone B1 and D1 wells would be drilled and may be completed to produce hydrocarbons. No access road construction is required for the Black Stone B1 location and minor modifications may be required for the Black Stone D1 access road. The combined surface disturbance of the well/production pads and gathering lines would result in the conversion of up to an estimated 6.74 acres of prime farmland soils to oil and gas use. Construction activities; drilling and producing the wells; and eventual plugging and reclamation activities would result in short- to long-term, adverse impacts on air quality, natural soundscape, geology and soils, and vegetation, localized around the project area; but no effect on Federally-listed threatened and endangered species is expected, and no historic properties would be affected. Cumulative impacts from commercial timber, recreational uses, and oil and gas activities would result in short- to long-term, adverse impacts on air quality, natural soundscape, geology and soils, vegetation, Federally-listed threatened and endangered species, and cultural resources on lands adjacent to the Unit.

4.0 CONSULTATION AND COORDINATION

Following the 30-day public review period, NPS will consider written comments received. Copies of the decision document will be sent to those who comment on the environmental assessment during the public review period, or to those whom request a copy of the decision document.

4.1 Individuals and Agencies Consulted

The following were consulted or contributed information during preparation of this environmental assessment:

Alabama-Coushatta Tribe of Texas
Blanton & Associates, Inc.
    Mark Kainer, Project Manager
Comstock Oil and Gas, Inc.
    Mark Williams, Project Manager
National Park Service
    Big Thicket National Preserve, Beaumont, TX
        Art Hutchinson, Superintendent
        Curtis Hoagland, Chief, Resources Management Division
    Geologic Resources Division, Lakewood, CO
        Carol McCoy, Chief, Branch of Planning, Evaluation and Permits
        Pat O'Dell, Petroleum Engineer, Branch of Planning, Evaluation and Permits
    Intermountain Regional Office, Lakewood, CO
        Cheryl Eckhardt, NEPA/Section 106 Specialist, Office of Planning and Environmental Quality
Natural Resource Conservation Service
Railroad Commission of Texas, Oil and Gas Division, District 3
State Historic Preservation Office
U.S. Fish and Wildlife Service

4.2 List of Document Recipients

During the public review and comment period, a copy of this environmental assessment will be sent to each of the following agencies, organizations, and businesses:

Chuck Rhinesmith, Alabama-Coushatta Tribe of Texas
Ellen Buchanan, Big Thicket Association
Mark Williams, Comstock Oil and Gas, Inc.
Dennis Prejean, surface landowner
Doug Dvorman, Molpus Timberlands Management
National Park Service
    Linda Dansby, Regional Minerals Coordinator, Intermountain Region, Santa Fe, NM
    Cheryl Eckhardt, NEPA/Section 106 Specialist, Office of Planning and Environmental Quality, Intermountain Region, Lakewood, CO
    Carol McCoy, Chief, Branch of Planning, Evaluation and Permits, Geologic Resources Division, Lakewood, CO
Debra Beene, Archeologist, State Historic Preservation Office
Phyllis Dunham Regional Director, Sierra Club, Austin, TX

Brandt Mannchen, Sierra Club, Houston Regional Group, Houston, TX
Janice Bezanson, Texas Committee on Natural Resources
Edith Erfling, U. S. Fish and Wildlife Service, Clear Lake Field Office, Houston, TX
Guy Grossman, District Director, Railroad Commission of Texas, Oil and Gas Division, District 3

4.3 List of Preparers

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APPENDIX A

State and Federally-Listed Species

	Federal Status	State Status

POLK COUNTY

*** BIRDS ***

Arctic Peregrine Falcon (*Falco peregrinus tundrius*) - potential migrant	DL	T
Bachman's Sparrow (*Aimophila aestivalis*) - open pine woods with scattered bushes or understory, brushy or overgrown hillsides, overgrown fields with thickets and brambles, grassy orchards; nests on ground against grass tuft or under low shrub		T
Bald Eagle (*Haliaeetus leucocephalus*) – found primarily near seacoasts, rivers, and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	LT-PDL	T
Henslow's Sparrow (*Ammodramus henslowii*) - wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking		
Red-cockaded Woodpecker (*Picoides borealis*) - cavity nests in older pine (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, & loblolly	LE	E
Swallow-tailed Kite (*Elanoides forficatus*) – lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees		T
Wood Stork (*Mycteria americana*) - forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960		T

FISHES

Creek Chubsucker (*Erimyzon oblongus*) – small rivers and creeks of various types; seldom in impoundments; prefers headwaters, but seldom occurs in springs; young typically in headwater rivulets or marshes; spawns in river mouths or pools, riffles, lake outlets, upstream creeks		T
Paddlefish (*Polyodon spathula*) - prefers large, free-flowing rivers, but will frequent impoundments with access to spawning sites; spawns in fast, shallow water over gravel bars; larvae may drift from reservoir to reservoir		T

*** MAMMALS ***

Black Bear (*Ursus americanus*) - within historical range of Louisiana Black Bear in eastern Texas, Black Bear is Federally-listed threatened and inhabits bottomland hardwoods and large tracts of undeveloped forested areas; in remainder of Texas, Black Bear is not Federally-listed and inhabits desert lowlands and high elevation forests and woodlands; dens in tree hollows, rock piles, cliff overhangs, caves, or under brush piles	T/SA; NL	T
Louisiana Black Bear (*Ursus americanus luteolus*) - possible as transient; bottomland hardwoods and large tracts of inaccessible forested areas	LT	T

POLK COUNTY cont.	Federal Status	State Status
Plains Spotted Skunk (*Spilogale putorius interrupta*) – catholic in habitat; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie		
Rafinesque's Big-eared Bat (*Corynorhinus rafinesquii*) - roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures		T
Southeastern Myotis Bat (*Myotis austroriparius*) - roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures		

*** REPTILES ***

Alligator Snapping Turtle (*Macrochelys temminckii*) - deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October		T
Louisiana Pine Snake (*Pituophis ruthveni*) - mixed deciduous-longleaf pine woodlands; breeds April-September	C1	T
Texas Horned Lizard (*Phrynosoma cornutum*) - most likely introduced; open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September		T
Timber/Canebrake Rattlesnake (*Crotalus horridus*) - swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto		T

*** VASCULAR PLANTS ***

Texas screwstem (*Bartonia texana*) – sandy soils in dry mesic pine or mixed pine-oak forests and forest borders; usually in fire-maintained longleaf pine savannas, but also in more mesic habitats; flowering (June-?)		
Texas trailing phlox (*Phlox nivalis* ssp. *texensis*) - endemic; deep sandy soils in fire-maintained openings in upland longleaf pine savannas or bluejack oak woodlands; flowering March-early April	LE	E

Status Key:
LE,LT - Federally Listed Endangered/Threatened
PE,PT - Federally Proposed Endangered/Threatened
E/SA,T/SA - Federally Endangered/Threatened by Similarity of Appearance
C1 - Federal Candidate, Category 1; information supports proposing to list as endangered/threatened
DL,PDL - Federally Delisted/Proposed for Delisting
NL - Not Federally Listed
E,T - State Endangered/Threatened
"blank" - Rare, but with no regulatory listing status

Species appearing on these lists do not all share the same probability of occurrence. Some species are migrants or wintering residents only, or may be historic or considered extirpated.